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Published on the 1st of each Month by

THE INDIA RUBBER PUBLISHING CO.

No. 25 West 45th Street, New York.

CABLE ADDRESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, Editor

Vol. 52.

JUNE 1, 1915.

No. 3

SUBSCRIPTIONS: \$3.00 per year, \$1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, \$3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank draft or Postoffice or Express money order on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

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COPYRIGHT, 1915, BY THE INDIA RUBBER PUBLISHING CO.
Entered at the New York postoffice as mail matter of the second class.

TABLE OF CONTENTS ON LAST PAGE OF READING.**HAVE WE TURNED THE CORNER?**

THE important question is not—Where are you? but—In what direction are you going? The last half of 1914 was undoubtedly a period of very general depression in American business circles but there are now unmistakable signs that, notwithstanding the uncertainty of the European situation, general business conditions in this country are steadily and noticeably improving.

On the 20th of May the members of the New York State Savings Bank Association convened for their annual meeting in New York City. There were 250 members present, representing almost every savings bank in that state. The most noticeable feature of that convention was optimism. The bankers reported that deposits had not only not fallen off but had been constantly increasing during the last few months, having now reached the vast total of \$2,000,000,000 for the state. And recently one of the publications devoted to financial matters gathered reports from 90 different cities representing every section of the country, and these reports quite uniformly stated that while local business conditions were not as good as a year ago they had been growing steadily better since the first of the year.

The condition of the United States Steel Co. is generally assumed to afford a very accurate standard by which to measure the situation among railroads and large industrial corporations, and the earnings of the steel company have grown rapidly since the beginning of the year, being in February 125 per cent. larger than in January and showing in March an increase of 450 per cent. over the January earnings. A large locomotive manufacturing company located in Pittsburgh which has been idle for the last two years has announced its intention of resuming operations on a scale requiring 1,000 workmen. And of equal importance with the improving conditions among the railroads and large industrial corporations are the extremely favorable crop reports given out by the government, showing prospects surpassing any yields in the past—which means great activity through the whole West. The South is rapidly recovering from its prolonged chill of the early fall when the price of cotton dropped so low.

Never before has there been such a balance of trade piling up in favor of the United States. Merchandise exports are going out from this country at the rate of ten million dollars a day or three and a half billions a year, with an estimated balance over imports for the present year of a billion dollars. Plenty of other indications might be mentioned, if these do not suffice, of increasing vitality in the national commercial life. And what is true of business at large is equally true of the rubber trade. Our correspondents from various rubber centers speak of the exceptional activity in manufacturing circles; and the prices quoted on the market for shares of the listed rubber stocks show that the public takes an optimistic view of the earning capacity of the large rubber manufacturing corporations. There certainly are evidences enough that the corner has been turned.

NO ONE CAN PLEAD IGNORANCE.

IF there is any one connected with the rubber trade—even with one of its remote accessory ramifications—who is still ignorant of the terms of the guarantee given by American rubber manufacturers to the British government in order to secure crude rubber from London he must be someone who either can't read or won't read, for the Rubber Club has taken every possible means to familiarize the entire trade with the character of this guarantee. Its terms, which were quoted in full in the February issue of this publication, were laid before all the rubber manufacturers of the United States in January, soon after the Rubber Club, through the Control Committee, had made arrangements with the British govern-

ment for the lifting of the embargo. A little later—in February—the Control Committee sent out a circular not only to manufacturers but to all importers, dealers and brokers, explaining the methods of procedure for securing rubber under the guarantee; and in order that not even the smallest tire retailer should lack full information in this matter the committee sent out another circular, on May 22, to every dealer in automobiles and automobile supplies in the country—sixty thousand all told—repeating the terms of the guarantee and calling attention to the necessity of strict adherence to its conditions.

INDICTMENT OF THE HIDDEN RUBBER SHIPPERS.

EVER since the discovery on February 15 of a large number of bales of cotton waste in which all told about 50,000 pounds of rubber was concealed, intended for shipment to Genoa, the rubber trade has been extremely anxious to learn all the facts of this interesting episode. In commenting upon this occurrence THE INDIA RUBBER WORLD in its March issue remarked: "The alertness and energy shown by the Control Committee of the Rubber Club in starting at once upon a thorough investigation of this matter convinced the British officials that the club would do everything in its power to maintain the reputation of the American rubber trade for honesty and square dealing with the British government."

The United States and the British governments were equally interested with the Rubber Club in identifying the culprits and in ascertaining the motive back of this attempt to smuggle rubber out of the country. The efforts of the Federal authorities, in whose hands the necessary action was lodged, have been completely successful. The whole story will be found on a later page of this issue. Five men have been indicted on the charge of conspiracy to defraud the government. One of these men is a lieutenant in the German army, another a German rubber manufacturer, a third a member of a rubber syndicate in Hungary; while the remaining two, though American citizens, are related to the others and in sympathy with the Teuton cause.

This publication has never believed that the attempt to ship this hidden rubber was the work of anyone in the trade looking for the profits that might accrue from such a transaction. The facts which have now all been brought to light prove that it was the work of Germans and Austrians—and their sympathizers—who hoped to be able to supply the home industry with much needed

material, and in that way to assist the home governments. The rubber trade is to be congratulated that the mystery is so thoroughly solved, and solved in a way that permits no suggestion of suspicion to rest on any member of the trade. And the Control Committee of the Rubber Club is greatly to be commended for the valuable assistance it was able to afford the Federal authorities and for the very satisfactory outcome of its work.

RUBBER IN THE SUBMARINE.

THERE were plenty of proofs before the 7th of May of the terrific effectiveness of the submarine, but the sinking of the "Lusitania" on that date brought home to the world as never before the appalling havoc which these unseen fighters of the deep could accomplish. This issue of THE INDIA RUBBER WORLD contains a description—written by one who has studied this type of craft not only when afloat and moving on the surface, but when submerged to very great depths—which shows the vital part that rubber plays in the construction and operation of these sub-sea terrors. It requires no technical knowledge to realize that absolute and perfect tightness is the prime essential of submarine construction, tightness not only against the inrush of waters from without but against the escape of gases and electrical power. The whole secret of both the effectiveness and the safety of this sort of craft lies in the total absence of leakage, even of the most minute character. No other substance but rubber would insure the necessary conditions. The strong appeal that the submarine makes to universal attention is not so much because of what it has already accomplished—though its work during the last six months has startled the world—but rather because of the promise its past performance has given of the dominant place it will hold in the naval warfare of the future.

The article on another page will assuredly interest every manufacturer of rubber, and particularly those engaged in producing the type of mechanical rubber goods so essential in submarine construction.

AMERICAN ADVERTISEMENTS BARRED FROM GERMAN PAPERS.

GERMAN trade journals, by order of the Imperial Government, have discontinued the printing of advertisements coming from any foreign country—either neutral or belligerent. An American manufacturer of rubber machinery or rubber supplies of any sort can no longer place his announcement in any rubber publication printed in Germany. The reason is said to lie in the possi-

bility that the innocent-appearing advertisement might conceal a cipher message.

Everyone concedes the marvelous attention to detail that has characterized German military operations, but the cutting off of communications in public prints between the rubber trade of America and other neutrals on one hand and the trade of Germany on the other appears like carrying precaution to rather fantastic lengths. However, the practical effect is not important, for under present conditions, and with the long contraband list, American exporters might be extremely eager to sell and German importers importunate to buy and still the resulting interchange prove quite insignificant.

THE PAN-AMERICAN CONFERENCE.

IT is something like a quarter of a century since Secretary of State Blaine, with that world-wide view which distinguishes the genuine statesman, conjured up the vision of Pan-American union. Since that time there have been many conferences of representatives of the United States and from the republics of the southern continent. These conferences have undoubtedly been of great benefit, as they have served to increase mutual understanding and good will. And they have undoubtedly assisted to some extent in encouraging the growth of commercial relations between North America and South America. But after all, trade is not a question of amity—it is a question of advantage. People will buy where they expect to get the most for their money. And, as stated often in these columns, the reason that Germany and England have secured so preponderating a proportion of the South American trade is to be found in the fact that they were willing to do more to get this trade than we were—because they sought this market with an energy that North Americans were not willing to emulate.

But there is no doubt that the hideous discord now shaking the foundations of Europe has tended to draw all Americans of both continents nearer together and to impress them as never before with the inestimable advantage of international harmony, fraternity and esteem. The doors to the South American market are certainly wider open under present conditions than they have ever been before, and it will be easier for the manufacturers of the United States to find South American purchasers for their products than it has been hitherto. But if this market is to be held permanently it must be held by sending goods especially adapted to South American needs, by offering easy terms and long credits and by financial assistance in the development of South American resources—in other words, by following the course that gave the Europeans entrance into that market and which has enabled them to hold it for so many years.

The establishment of United States banks at various points in Brazil, Argentina and other countries must prove of substantial assistance; and undoubtedly if the merchant marine that plies between the ports of North

and South America sailed under the American flag that too would be helpful, but the goods themselves and the terms on which they are offered are, after all, the vital features. Former Pan-American conferences have been interesting and of considerable sentimental value but still largely academic. This latest conference ought certainly to be followed by practical and tangible results.

THE HEAVY BURDEN OF WAR.

THE general tenor of the messages that come from Germany is to the effect that industries there are being conducted very much as usual, and that the man on the street hardly knows that there is any war in progress, but the glimpses that one may obtain from time to time of the internal situation in that empire indicate that while industrial activity is still maintained it is maintained under conditions that are far from normal. Elsewhere in this number there appears the last annual report, covering the year 1914, of the Continental Caoutchouc & Gutta Percha Co., of Hanover, which is exceptionally interesting because of the unusual items that appear in the expense account. For instance, during the last five months of the year the company expended nearly half a million marks for the maintenance of the families of employes who had joined the army. Other items of expense include payments for cigars and other comforts for troops passing through that section, contributions to German prisoners of war in foreign countries, presents sent to troops in the field, maintenance of hospitals and subscriptions to the Red Cross fund. At the same meeting at which this report was read an appropriation of half a million marks was voted for the support of the families of workmen who had fallen in battle; the amount already paid because of the exigencies of the war, together with the additional sum voted, being in excess of a quarter of a million dollars. All of which shows that while the commercial activities of the empire may be carried on with their accustomed vigor, they are obliged to carry a most unusual burden.

On reading this rubber company's report one is impressed first with the generosity and patriotism of the German industrial corporations; but one's second and most lasting impression is of the great burden that this deplorable war is laying upon the commercial life of all the active belligerents.

THE LAST OF THE AMERICAN HONORARY MEMBERS of the Rubber Club of America passed away in May. John P. Rider and John D. Vermeule, both veterans in the rubber business, both successful, both dating back to the days of Charles Goodyear and the beginnings of the trade, have gone to the Great Beyond. With A. D. Schlesinger and Jacques Huber they were men who did much for the trade, added to its knowledge, and by their enterprise, probity and breadth of view proved themselves worthy members of the great industry to which they devoted their lives.

Rubber's Vital Part in the Submarine.

"THE sinister submarine: a two-edged weapon." In this fashion has an expert in subaqueous navigation described the under-sea boat, and good reason there is, indeed, for this characterization. For some years prior



A SUBMARINE AT FULL SPEED, WITH ONLY HER PERISCOPES SHOWING.

to the present World War the submarine stirred the public mostly when some catastrophe overwhelmed it and the brave men in charge were carried to the bottom and drowned. True, there were instances when some of the crew succeeded in escaping and others were rescued by salvaging the stricken craft in time, but, as a grewsome rule, the men died at their posts. In our own navy, within the past few weeks, we have had brought home to us the perilous nature of service aboard submarines in time of peace. The fatal plunge of the "F-4" has marked the first of such accidents in our flotilla, and this will give us some idea of the hazards courageously faced by the crews of kindred craft of the nations now at war.

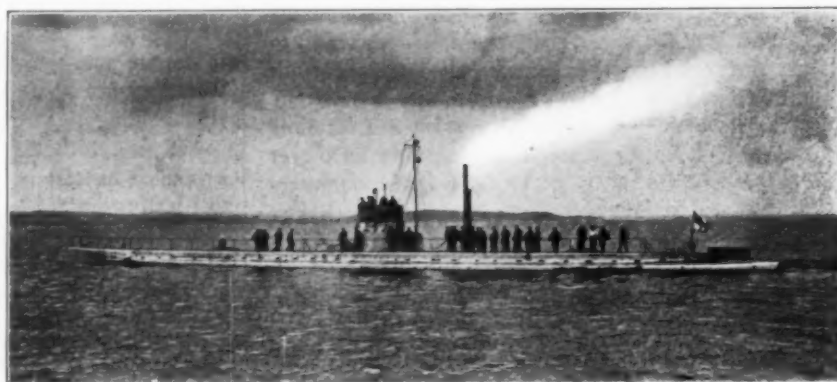
The sea is the submarine's worst enemy—an ever-present one, for the deeper it dives into this hostile element the greater the odds against it. The pressure of the enveloping water that prevails near the surface increases with each foot of submergence at the rate of .43 of a pound, and this crushing force exerts itself upon every square inch of the boat's body in touch with the sea. Suppose the submarine is down a hundred feet, then every square inch must sustain a pressure of 43 pounds and every square foot will be subjected to a menacing weight of nearly three tons! Now see how fatal this may prove—taking the ill-fated French submarine, the "Lutin," as an instance.

While performing exercise manoeuvres off the port of Bizerta in 1906, during which the craft probably submerged not more than 60 feet, she suddenly plunged and sank to the bottom in water 118 feet deep, drowning everyone inside of her. The cause of the catastrophe was a stone no larger than a nut, which had unknowingly prevented the complete

closing of a sea valve in one of the ballast tanks. The walls of this tank were not intended to withstand the direct pressure of the sea, and with the valve even slightly open this bursting force became too great at the manoeuvring depths. The steel plates yielded, letting the burden of water into adjacent tanks, and before the commander was aware of it the dead weight of his boat was too great; she dropped to the bottom like a stone, her batteries were flooded, asphyxiating gases generated, and the crew was overcome.

The purpose of the submarine is to approach her target unobserved and in broad daylight to do that which is well-nigh impossible for the speedy surface torpedo boat. The submarine, by sinking beneath the waves, clothes herself for the time being with the water's protecting armor, and when below the surface is absolutely secure against gunfire. But until nearing her naval quarry, the under-sea boat travels upon the surface in what is technically termed her "light" condition. In this state, having free access to the air, she is propelled by means of explosive motors using either heavy oil or gasoline, the newest types having recourse to the safer kerosene. Explosive engines use up air greedily and are therefore unserviceable when the free atmosphere cannot be drawn on, but they are able to drive the submarine at its highest speed along the surface.

For submerged travel the propulsive energy is electricity, furnished by storage batteries, and this motive force must be husbanded, for it has relatively a very limited capacity—submarines being able to run at full speed, and that speed considerably lower than the rate of surface travel, only for about three hours. In order to prepare the boat for an underwater run her surface buoyancy is reduced by admitting tons of water ballast into tanks built for the purpose. When at last ready for submerged work the remaining buoyancy as a rule does not exceed 500 pounds. The boat is forcibly held below the surface by reason of her forward motion and the pressure upon her submerging rudders, and should her engines stop the 500 pounds of reserve buoyancy would cause her to rise. But should leakage accumulate in the course of



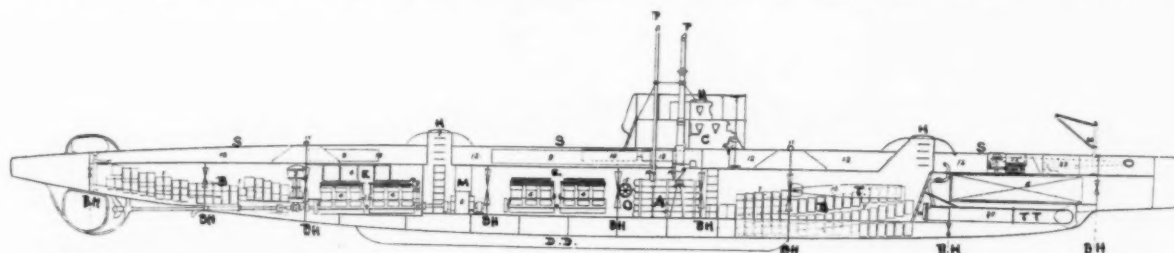
A SISTER SHIP OF THE FAMOUS GERMAN U-9 BOAT.

a run ever so slightly in excess of the original reserve buoyancy, then the craft would have a measure of "negative" buoyancy and would certainly sink upon the stopping of her electric motors.

A gallon of sea water weighs a little over eight pounds, and sixty gallons would be quite enough to wipe out that

buoyant margin of safety of 500 pounds. The greater the pressure impelling water into a passageway, such as a leak, the faster the water will flow, and thus the hazard increases as a submarine goes deeper and any part of her structure yields so that the sea can work its way inward. Therefore, the greatest care must be exercised to prevent leaks and to see that everything is sound and strong enough to withstand the sea's crushing force within certain limits. In the United

The conning-tower forms a separate compartment placed on top of the main pressure-resisting hull of the submarine. In order to isolate this space, in case of accident to the tower, there is a second manhole with bronze top in the floor of this navigational turret, and here, again, the passageway can be sealed by drawing down the lid upon a thick gasket of rubber. One of the two periscopes has its lower end in this chamber, and the man at the wheel uses this instrument in steering



AN INBOARD LONGITUDINAL VIEW OF A MODERN SUBMARINE.

A—Compressed Air Flasks. B—Storage Batteries. BH—Water-tight Bulkheads. C—Conning-tower. D—Safety Drop Keel. E—Engines. H—Hatches. M—Electric Motor. O—Controlling Room. P—Periscopes. S—Superstructure. T—Torpedo. TT—Torpedo Tube.

States navy all of the later under-sea boats are required to be water-tight at a depth of 200 feet, and are actually tested by a submergence of that extent before they are accepted by the government from their builders.

Now, the general reader knows that a submarine must seal itself up tight before it sinks below the sea's surface, yet there must be openings to the enveloping water, but openings susceptible of perfect control. Again, the submarine would be as near-sighted as a human diver plunging into the water but for the optical cunning of modern periscopes. These observing instruments reach above the waves when the subaqueous craft is far enough beneath the surface to be secure from the shot and shell of a foe.

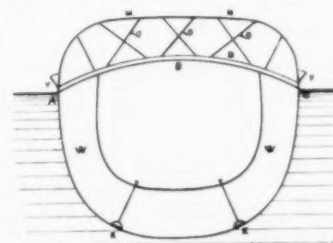
But the reader of this publication may be impatient to know how india rubber helps to make the submarine efficient and how it aids the crew to hold out the insidious sea. Let us start at the beginning by following a craft like one of the German U-boats in her various manoeuvres. While running on the surface, or while alongside the dock, we see that she has a circular hatchway on top of her conning-tower and two or three more of these at points along the crest of her curving deck. The hatch in her conning-tower is the last one to be closed before the boat submerges. The others are for the general passage in and out of her crew and for the loading of stores, ammunition and torpedoes. In order that these openings, when sealed, shall be absolutely watertight, an annular ridge in these heavy metal covers settles deeply into rubber gaskets of the best sort.

Now all modern submarines have two hulls, one that is strong enough to withstand the sea's pressure at any designed working depth and the other which constitutes an envelope or superstructure to which the sea has full access when the craft is submerged. This superstructure or outer hull gives the boat its ship-shaped form, which makes the vessel more seaworthy and capable of being driven at high speed when traveling on the surface. In this latter condition, i. e., "light" trim, water must be kept out of the superstructure or double hull space lest the submarine be made hard to handle by the surging of such water in partly filled spaces. Accordingly, all of the openings in this outer body or shell are made tight by seatings of rubber. In the U-boats of the German navy this double hull space is used extensively for the stowage of fuel, and as the oil is consumed by the engines water is admitted to make up the deficit, so that the tanks are always filled and no air pockets are left for the sea's pressure to push against and to crush at the deeper operative depths.

toward his target when the boat is below the surface. In order that the observing instrument may be rotated and yet not leak, it passes up through a stuffing box packed with rubber. That certain of its lenses shall not be fractured by an ordinary jar, they, too, are set in beds of soft rubber, and that the steersman may not bruise his cheek-bones and brows when looking into the periscope there are rubber cushions attached to the eye-pieces. The other periscope, reaching up from the controlling room below the conning-tower, duplicates the features we have just described save that it passes through a second rubber-packed, water-tight stuffing box on its way up through the main hull or floor of the conning-tower.

Before we take up the propelling motors of one of these U-boats, let us have a glimpse at the bow and the stern torpedo tubes. Generally, before leaving her base, the submarine places a torpedo in each of her tubes; and that these rather delicate weapons shall not rust there, the tubes are kept dry until just before the commander is ready to expel them. Therefore, each torpedo tube must have an outer and an inner door. These doors are firmly seated against annular gaskets of heavy rubber. To launch the torpedo, the outer door is released and swung clear; the tube fills with water from the sea, and at the desired moment compressed air is

blown in at the rear of the tube—the pressure being sufficient to force the torpedo out and to trip the little lever which sets the engine of the "steel fish" going. The torpedo itself is divided into three parts—the warhead containing the explosive, the middle body holding the pent-up compressed air for propulsive purposes, and the after section containing the motors to operate the twin screws and the steering and depth-regulating mechanisms.



CROSS SECTION VIEW OF SUBMARINE HULL.

A—External Hull. B—Internal or Pressure-resisting Hull. K—Valves Admitting or Expelling Water Ballast. M—Superstructure Deck. O—Supporting Framework of Superstructure. V—Vents in the Superstructure by which that space is filled or drained automatically as the Laurenti Submersible sinks or rises. W—Water Ballast Tanks.

*Have rubber gaskets.

The forward and after parts are joined to the central body and made water-tight against rubber collars, and rubber gaskets and packing figure elsewhere in this sinister instru-

ment of destruction. The almost uncanny working of the depth-regulating apparatus relies largely upon a diaphragm of rubber, and this is the part of the torpedo that makes certain of the weapon hitting the dreadnought below the armor belt. But the tube must be reloaded, and to that end another torpedo is run on a rubber-tired truck right up to the rear of the recently emptied cylinder. The water is drained from the tube into a tank provided for the purpose, that weight taking the place aboard of the submarine of the torpedo just fired—in this way preserving the nice equilibrium demanded in craft of this sort. With the water out of the cylinder then the rear door can be opened and the second torpedo inserted. With this done, the door is swung to and, like its companion at the outer end, is seated against a thick cushion or gasket of soft rubber.

As we have already said, the motive power when running at the surface is provided by internal combustion engines. The exhaust gases from these motors are heavily charged with carbon dioxide and would soon sicken, if they did not asphyxiate, the crew inside of the boat if there were leakage within the engine room. Therefore, the openings into the crankpit, the air intakes exposed to back explosions, etc., must be rendered gas-tight, and, as a rule, manhole plates, check valves and certain of the joints in the exhaust system are secured by rubber packing. But it is in the electrical installation of a submarine that india rubber figures most, and there is the amplest reason for this. Take, for instance, a German submarine of 300 tons submerged displacement. A craft of this sort was the U-9 that sent the three British cruisers, the "Hogue," "Aboukir" and "Cressy," to the bottom. To drive such a boat submerged there are two electric motors, each of 320 horse-power, and the propulsive energy for these motors is supplied by two extensive

ments of this insulation for electric circuits, the rubber coating is obliged to show a dielectric strength sufficient to resist rupture when exposed to an alternating current of 1,500 volts applied continuously for a minute. To guard against physical injury, these heavy-power cables are covered with lead. These

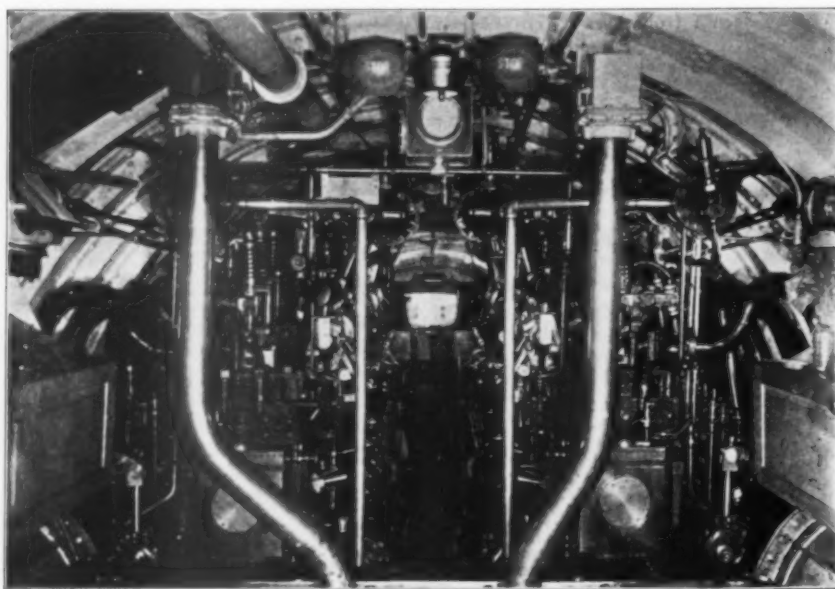


A RUSSIAN SUBMARINE. THREE OPEN HATCHES ARE SHOWN, AND IN TWO COVERS THE DARK LINE OF THEIR THICK RUBBER GASKETS CAN BE SEEN.

precautions are very necessary, because the conductors must be both water-tight as well as secure against electrical leakage.

A submarine is a veritable magazine, and the men aboard face explosive perils of various sorts. Aside from the gun-cotton in the warheads of the torpedoes, compressed air for various operative purposes is stored in metal flasks at the explosive pressure of more than 2,000 pounds per square inch. Should one of these tanks rupture it would constitute a formidable destructive agent. Next, the gases given off by the fuel, when mixed with sufficient air, are highly inflammable and explosive. Further, the hydrogen, emanating from the storage batteries when the accumulators are nearly charged, or at certain periods during their discharge, will ignite in the presence of a spark and exert a violent rending force. Therefore, there must be no fuel leaks nor a chance for battery gas to gather in any quantity within the boat, and, equally vital, electric sparks due to faulty insulation, switch contacts, etc., must be sedulously prevented.

On more than one occasion lives have been sacrificed or serious injuries incurred by the explosion of battery gas. In order, therefore, to keep this dangerous hydrogen from getting into the body of a submarine from the accumulator compartments, until lately the deck



HOW THINGS ARE CROWDED IN THE ENGINE ROOM OF A SUBMARINE. THE STORAGE BATTERY SPACE IS UNDER THE PLACE WHERE THE CAMERA STOOD.

groups of storage batteries.

It should be perfectly clear that current of this capacity flowing from accumulators to motors in the narrow confines of the steel body of a submarine must be extremely well insulated in order to guard against leakage and the dire consequences of a short circuit. Here is where rubber serves as nothing else can. To give some idea of the broad require-

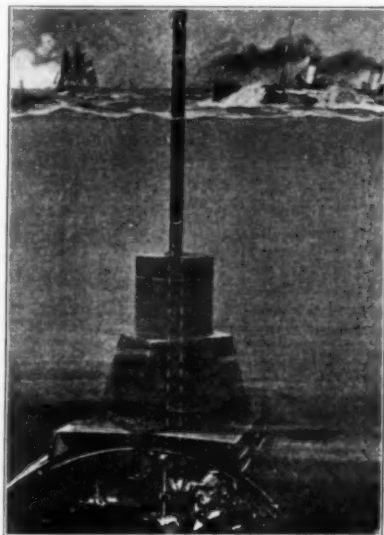
immediately over these spaces was made tight by means of a rubberized cloth; but this has been very much improved upon in the battery installations of the newest of submarines. There are two things which are to be avoided, the escape of the hydrogen into the living space and also the presence of minute particles of sulphuric acid carried off with the bursting bubbles of the electrolyte. These tiny drops of acid

irritate the lungs and the mucous membrane of the nose and throat. In order to arrest the acid particles the vents in the cell tops now contain pieces of sponge rubber, and these devious passages catch the misty electrolyte, condense it, and cause it to fall back into the accumulator instead of passing upward into the boat.

But the hydrogen is disposed of in another way. This gas is no longer allowed to escape into the battery compartment to be drawn off thence by ventilating fans and forced outward through suitable conduits. It has been found that the so-called air-tight deck and rubber cloth are not sufficiently impervious as they are laid, and therefore a more effectual system is employed by which every cell is dealt with separately. In a 300-ton submarine of the German U type there are probably quite a hundred and twenty individual accumulators, and these are distributed equally in two battery compartments. At Hagen, Germany, is manufactured the well-known Tudor battery for submarines, and a typical cell should be of interest to the india rubber trade.

To begin with, the containing jars are made of hard rubber. This must be of excellent quality and thick enough to stand up under the service strains encountered in a sea-going craft of the submarine order. Each jar will average about 40 inches high with a horizontal cross section of something like 14 x 20 inches. The sides are 7/16 of an inch thick while the bottoms are 1/2 inch thick and provided with footings of semi-hard rubber. Each cell holds 23 plates—11 positives and 12 negatives—and these lead elements are separated one from another by two corrugated hard rubber separators. But this does not end the hard rubber parts.

Each jar has a hard rubber cover which fits so snugly upon the top of the cell that it is gas-tight, and in this top there is an inlet vent and an outlet trap which serve to prevent the spilling of the electrolyte when the submarine rolls, provided it does not heel over more than 15 degrees from the vertical nor with a rhythmic frequency of more than 5 seconds for a complete swing from side to side. It is said that an occasional roll of 30 degrees will not cause the electrolyte to spill. Of course, these hard rubber covers are removable. But in order to take care of the escaping hydrogen a flexible rubber hose conduit is attached to each jar, and, in turn, connected to the ventilating main operated by forced draught. In this manner, and by dealing with the jars separately, the explosive hydrogen is drawn off as it gathers and expelled before it can accumulate and do harm.



PERISCOPE OF A GERMAN UNDER-SEA BOAT.

Now the reason for water-tightness in a submarine's storage batteries is to prevent, if possible, the generation of chlorine gas, which uniformly follows when sulphuric acid and sea water mingle. Chlorine gas is destructive to life, and a gallon of this in the free space inside of an average-sized under-sea boat would suffice to intoxicate and then to asphyxiate the

men pent up in such a craft. Its generation, once the acid and the sea water meet, is very rapid, and this probably accounts for many disasters in boats of this sort despite certain safety features. The men were stupefied before they could act for their own security.

It is to obviate just this danger that the United States navy will shortly install Edison batteries aboard one of the newest submarines, now building. But even so, this will not eliminate the service of rubber as an insulator between the plates. The jars or containers are made of metal, while the electrolyte is an alkaline solution instead of sulphuric acid. In one of the Edison pamphlets this caution appears: "Never bring a lighted match or other open flame near battery."

Therefore, while this form of accumulator disposes of the danger of chlorine it apparently does not do away with gassing, and we shall probably find that the same system of rubber tubing for ventilation will be required for these batteries when installed in submarines. These additional details about the new storage battery appear in one of the pamphlets issued by the Edison company. "The terminal posts are effectually insulated from the cover by means of hard rubber washers and bushings. A soft rubber washer, used for packing to prevent solution from creeping, also serves as an insulator. This packing washer is held down by a heavy hard rubber bushing threaded into a pocket on the cell cover. The rubber bushing at the positive pole is red in color while that at the negative pole is black."

Besides operating the motors for submarine propulsion, electricity is the motive energy for certain of the pumps—especially for those that must operate in draining the ballast tanks to obtain buoyancy should the boat go to the bottom in 200 feet of water. The steering gear and the diving rudders are functioned by electricity, and so, too, are the periscopes rotated. Electricity does the cooking, and, under some circumstances, the general heating; and the storage batteries supply the needful current for the incandescent lighting system and the wireless. Rubber insulation is provided for all of these conductors and hard rubber plays its part at the switchboards and at points in the get-up of the various motors.

Up-to-date submarines are now divided into a number of water-tight separate compartments, so that in case of injury to the hull admitting water the damaged space can be isolated and the crew seek safety in the adjacent unharmed spaces. This means that every one of these separating bulkheads must have a door that can be swung to and sealed water-tight, and to this end gaskets of india rubber are indispensable. Again, access must be had, from time to time, into the various ballast tanks and fuel spaces so that the inside surfaces of



THE BREATHING AND LIFE-SAVING APPARATUS WITH WHICH THE CREWS OF GERMAN SUBMARINES ARE PROVIDED.

the plating can be examined to see that rust is not eating away the steel and reducing its powers of resistance against the pressure of the sea when traveling deeply submerged. These manholes have bolted covers, and to make them absolutely water-tight they are screwed down against gaskets of rubber.

In order to increase the element of safety, the latest under-sea boats are provided with salvage buoys which rise to the surface when released by a trigger worked from within the craft. These buoys are connected with the sunken boat by an armored rubber hose through which air can be pumped down from the surface, and insulated in the walls of this hose are the circuits for a telephone and an electric signal light. But rubber also is used in the special escape helmets and dresses now supplied for each member of a submarine's crew. These helmets are a modification of the fire and mine rescue helmets which we have recently described, and they have an air regenerating apparatus which will supply air for the wearer for at least an hour. The purpose of these helmets is twofold: First, they make it possible for the crew of a submarine to work in a vitiated atmosphere and, even in the presence of chlorine gas, to take steps for the refloating of the boat, which might be out of the question without this protective covering, and, second, they enable the men, under some circumstances, to work their way out of a completely flooded submarine so that they can rise to the surface provided the depth of water be not too great.

The batteries of an under-sea boat require frequent inspection as well as the removal from time to time of the damaged plates. The men must use acid-proof rubber gloves for this work, and the hands must be similarly protected when manipulating live circuits. In refilling the battery jars with electrolyte, or when collecting acid that may have been spilled over into the lead-lined accumulator space, a special pump is employed, and here again rubber tubing is demanded. At various points, where heavy doors swing, rubber buffers are fitted, and, again, at certain places where a firm footing must be assured, corrugated rubber mats are provided. Finally, work aboard a submarine is a wet business, and therefore most of the crew are supplied with high rubber boots and rubber storm coats and caps. Relatively small as a submarine is, still its dependence upon rubber is very extensive, and the amount of rubber used in this way is bound to increase rapidly because of the striking proof the submarine has given of its terrific effectiveness.

"PERMA"—A GOLF BALL PAINT.

A rubber paint for golf balls, which increases their cost only about \$1.50 a dozen and which is said to render them good for at least a hundred holes, is one of the season's new features in golf ball manufacture. This paint has been introduced under the registered trade name "Perma," and under the claim that it increases the elasticity of the ball, causes it to cling to the surface of the club and enables one to make straighter and more certain plays. It can be scrubbed with soapy water and a brush until it has a fresh, new appearance.

The same manufacturers have also brought out a new golf ball, the "Honor," the first ball to carry "Perma" paint. [A. G. Spalding & Bros., New York.]

THE "NON-SEPARABLE" BALATA BELT.

A new balata belt is being introduced differing in construction from the old style in that it has for its base a solid woven fabric balata impregnated. It is claimed that this new type of balata belt is very strong, pliable to a high degree, and that it will not open up under any condition of work. It has no seams to split, and is recommended for economy in use. It is made in four styles—light, single, medium and heavy—for different varieties of work. [W. H. Salisbury & Co., Chicago.]

RUBBER STATISTICS FOR THE UNITED STATES.

ARTICLES.	March, 1915.		Nine Months Ending March, 1915.	
	Quantity.	Value.	Quantity.	Value.
Imports of rubber and manufactures of:				
India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured—				
Balata .....pounds..free	159,942	\$58,333	2,098,084	\$821,533
Guayule gum	689,278	193,015	3,534,012	1,021,559
Gutta jelutong	229,571	11,043	10,449,033	494,490
Gutta percha	48,022	12,581	1,020,083	155,060
India rubber	26,025,791	12,515,091	116,506,851	54,800,558
India rubber scrap or refuse fit only for re-manufacture	346,724	17,116	7,636,001	504,877
Total unmanufactured.		\$12,807,179		\$57,798,077
Manufactures of—				
Gutta percha .....dutyable		\$230		\$10,523
India rubber		49,918		660,382
Total manufactures of.		\$50,148		\$670,905
Substitutes, elasticon and similar .....dutyable		\$216		\$24,775

IMPORTS OF CRUDE RUBBER BY COUNTRIES.

From:				
Belgium .....pounds			1,902,370	\$950,872
France	3,719	\$2,095	616,608	259,128
Germany			732,118	358,088
Portugal	821,401	316,452	2,619,520	855,448
United Kingdom	11,527,571	6,017,731	47,377,134	24,346,765
Central American States and British Honduras...	215,068	83,657	604,675	252,197
Mexico	67,794	24,833	1,352,666	512,330
Brazil	8,323,919	3,713,016	38,498,988	16,119,190
Other South America....	1,315,799	539,621	3,781,306	1,634,992
East Indies	1,282,523	636,165	14,028,940	6,783,925
Other countries	2,467,997	1,181,521	4,992,526	2,727,623
Total	26,025,791	\$12,515,091	116,506,851	\$54,800,558

EXPORTS OF AMERICAN RUBBER GOODS.

India rubber, manufactures of:				
Scrap and old.....pounds	139,422	\$24,248	1,492,063	\$164,055
Reclaimed	507,044	84,441	4,411,051	612,881
Belting, hose and packing.		101,020		1,341,316
Boots and shoes—				
Boots .....pairs	6,894	18,444	304,905	689,803
Shoes	130,510	62,553	1,903,906	1,901,561
Tires—				
For automobiles		627,505		2,887,608
All other		54,642		302,919
All other manufactures of.		340,138		2,209,997
Total		\$1,313,001		\$10,110,140

EXPORTS OF AUTOMOBILE TIRES BY COUNTRIES.

Tires for automobiles:				
France				\$6,090
England		449,560		1,530,701
Canada		50,000		464,392
Mexico		8,332		73,349
Philippine Islands		3,384		160,631
Other countries		116,229		652,445
Total		\$627,505		\$2,887,608

EXPORTS OF FOREIGN MERCHANDISE.

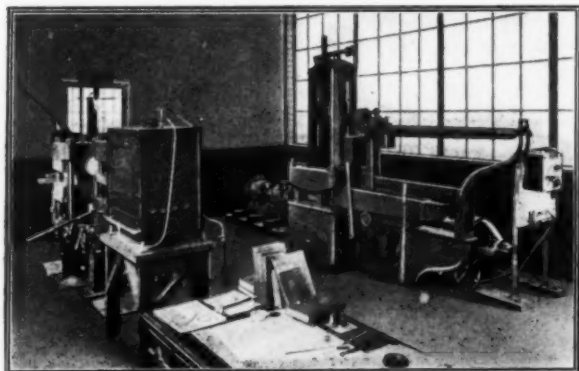
India rubber, etc., and substitutes for, and manufactures of:				
Unmanufactured—				
Balata .....pounds..free	79,309	\$28,301	849,064	\$328,440
Gutta percha			3,460	1,488
India rubber	568,069	294,342	5,415,639	2,884,382
Total unmanufactured.		\$322,643		\$3,214,310
Manufactures of india rubber		\$6		\$5,448
Substitutes, elasticon and similar .....dutyable		345		345

A PENCIL FLASH LIGHT.

A New England company is manufacturing a novelty in the form of a combination pencil and flash light, a small device that can be carried in the pocket without inconvenience. Instances where such an invention could be made useful are numerous, as it affords means both for writing and seeing what is written. A small rubber insulator is used in this device, and to obtain a light it is necessary only to push the pencil into writing position. [Hawthorne Manufacturing Co., Inc., Bridgeport, Connecticut.]

Substitutes for Hard Rubber.

CHARLES GOODYEAR, in discussing hard rubber, the invention of Nelson Goodyear, is said to have characterized it as a material so unique and valuable that it would never be successfully counterfeited. Nearly 70 years



Boonton Rubber Mfg. Co.

MECHANICAL TESTING APPARATUS FOR BAKELITE.

have passed and his prophecy has been strikingly verified. Whether crude rubber has been sold at 50 cents or \$3 a pound, hard rubber manufacture has not only continued but the business has shown a steady growth. While vulcanite has not had the wide range of usefulness that soft rubber has enjoyed, its field is a wide one. It is the insulator most desired for electrical instruments of all sorts in telegraph, telephone and wireless lines. It finds also a special use in surgical and stationers' goods, in scientific apparatus, in sporting goods, in high pressure valves and packings, in acid pumps and utensils, and scores of minor lines. In all of these lines substitutes have been produced—some with a considerable degree of success, due, as a rule, to the low price at which they could be marketed.

Hard rubber has so many valuable properties that it cannot be said that any substitute possesses all of them. A number have some of them, and in many cases these properties are sufficient for requirements for certain purposes.

The superiority of hard rubber for insulating purposes was early recognized. In addition to the higher cost of vulcanite, its deterioration when exposed to light has been mentioned as an argument against its use.

In the Bureau of Standards at Washington a sample was kept in diffused light for a year and a marked deterioration in its insulating capacity was noted on testing. On exposure to sunlight for about six months it had deteriorated more than in the previous year.

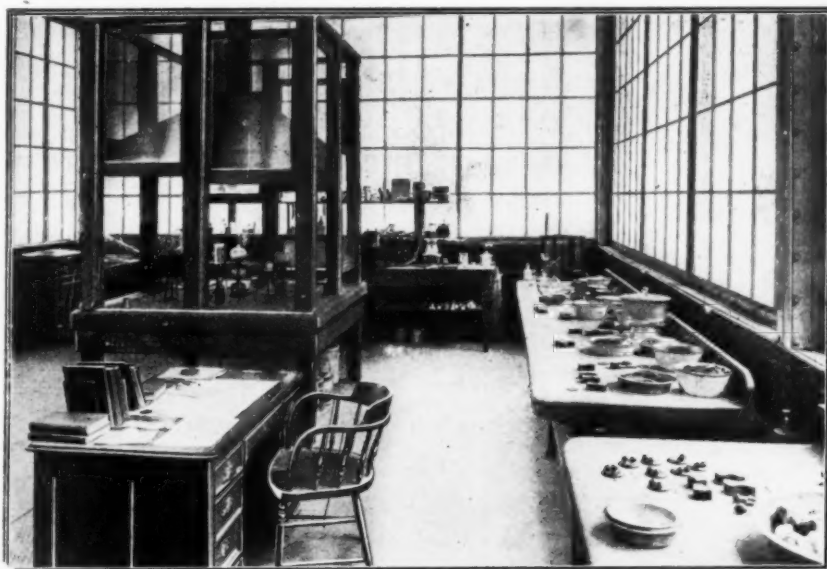
Various methods of cleaning the surface were tried. Rubbing with oil improved it, but not as much as desired. Caustic soda improved the appearance but not the insulating qualities.

Finally, it was found that by soaking in water for two days the resistance became greater than in the original sample, on account of the rougher surface. Unfortunately, this experimental sample contained a large amount of filler besides the rubber and sulphur. The nature of this filling material was not determined or disclosed. It is quite likely, therefore, as suggested in the record of tests, that soluble sulphates were formed on the surface from oxidation of the sulphur in combination with the filling.

INSULATING MATERIALS.

While insulating materials such as mica, porcelain and glass do not possess the toughness and elasticity of hard rubber, they are used as substitutes because of their cheapness.

Rubber is by far the best binder for any sort of molded insulation. Shellac, however, is extensively used, with fillers to give strength or to improve the fireproof qualities. Shellac has risen so in price that of late it has been displaced by cheaper gums, such as damar, rosin and the asphalts. These gums are melted, then put into a mixing machine with the fillers, taken out and rolled into sheets, which latter operation closely resembles ordinary rubber mixing. The sheets are cooled and broken up, softened and put into hot molds, pressed, cooled and emptied out as finished product. Another method is to dissolve the binding material in a solvent, mix with the filler, cool and then remove and dry. When the product becomes hard it is ground to powder. This is placed in heated dies and pressed till melted, then cooled in the die and removed in finished condition. There being no vulcanization, it is evident that only those binders can be used which are plastic when hot and solid when cold, and that if heated while in use to the fusing point the binders will soften and



Boonton Rubber Mfg. Co.

CHEMICAL LABORATORY IN A BAKELITE PLANT.

be worthless. A large percentage of fillers, however, will stand high heat for a short time. Ordinary asphalts, pitches or bitumens are not suitable for this work, as they soften at too low a temperature.

Rosin, while the cheapest gum, also melts at the lowest temperature and therefore is the most unsuitable. Rosin

hardened with lime, as used in varnish works, is better. In these compounds the higher the percentage of the binder the better the insulating qualities; of filler, the more fireproof the product. In using asphalts and binders of this class heat is not employed, but the binders are dissolved in solvents and mixed with the fillers to make a plastic which is cold-molded and afterwards dried to remove the solvent and thus harden the mass. These products do not resemble hard rubber as closely as those before mentioned, but they are largely used as insulators, and while liable to shrink in drying, yet they can be so made as to be acceptable for many classes of work.

CASEIN PLASTICS.

A great deal of work has been done and money spent in the endeavor to produce plastics having a basis of casein. It does not seem to be a promising material, yet many articles, such as billiard balls, have been made from it.

While casein can be obtained from skim-milk by use of rennet, as in manufacturing cheese, it is customary to use muriatic acid for coagulating when making it commercially.

Casein mixed with lime or other alkali and a little water can be molded into a plastic mass which dries very slowly to a transparent mass nearly as hard as bone and which can then be turned or otherwise worked. If mixed with fillers and slowly dried it shrinks some, but retains its shape. The great weakness of all these casein articles is their affinity for water. If they lose absolutely all their water they become hard and brittle and are no longer plastic. On the other hand, if subjected to moisture they are liable to absorb it and decay. To avoid this casein is treated with formaldehyde, which hardens it and renders it more insoluble. This product, patented, is in use under the name of galalith. Galalith has been introduced in the European market in a variety of forms and has been used quite largely. It is a hard, horny mass which, by the incorporation of pigments and fillers, can be converted into imitation ivory, jet, horn, etc., and into most articles ordinarily made from celluloid. Galalith is un-



American Vulcanized Fibre Co.

MACHINING OF VULCANIZED FIBRE PARTS.

affected by fats and oils, alcohols or dilute acids, but it swells up in alkaline liquids. It is as good an insulator as celluloid and will resist fire, as it chars without melting. It is free from the camphor smell of celluloid, and odorless.

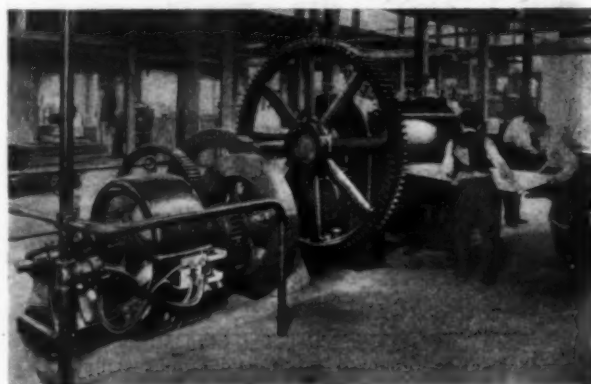
CELLULOID.

Celluloid is a plastic which closely resembles hard rubber in some of its valuable qualities. It is tough, flexible and elastic to a remarkable extent and can be molded with ease, as when heated it becomes soft. Its great drawback is inflammability.

Gun cotton, or the highly nitrated cellulose, was first made in Europe. Dissolved in ether, the solution was known as collodion and was used for photographic films at an early day.

If cellulose is treated with nitric acid, and preferably also sulphuric acid, under certain conditions of time, temperature and concentration, there results a nitrocellulose which, when mixed with camphor, produces the plastic ordinarily called celluloid, a substance which, though quite inflammable, is not explosive and is largely used for many purposes for which hard rubber is also well adapted. In American production the wet nitrocellulose is ground up with camphor and the mixture dried and heated, when the camphor enters into solid solution with the nitrocellulose, forming a plastic which may be rolled into sheets and also may be molded, while warm and soft.

In the manufacture of celluloid there are a number of



Delaware Hard Fibre Co.

CALENDERING SHEETS OF HARD FIBRE.

processes analogous to those used in rubber manufacture. There is the mixing of the nitrocellulose and camphor on rolls while a little solvent, such as alcohol or ether, is added to keep the mass soft while the rolls are heated to about 50 degrees C. Cut sheet is also manufactured from celluloid in a manner very similar to rubber. The celluloid is also calendered to give a smooth finish to sheets. The hot molding is done in presses similar to vulcanizing presses.

Celluloid has one feature favoring it over rubber in that it is transparent and readily takes any color. Being so easily molded, it is used to imitate horn, ivory, tortoise shell, ebony, etc.

The mixture of casein with celluloid is said to have met with considerable success, particularly in reducing its inflammability.

CONDENSATION PRODUCTS.

If a phenol or carbolic acid, or body of this nature, is heated with formaldehyde or a similar body, a condensation product is formed with elimination of water, the body first appearing as a heavy oil, then assuming a resinous appearance, all the time becoming harder and more insoluble; and finally, if highly heated, becoming very hard and insoluble, somewhat resembling amber in appearance.

While this general process was long known, it was not until Dr. Baekeland produced Bakelite that it became of commercial importance. His work resulted in two fundamental discoveries: First, he found that in the presence of minute quantities of alkali, preferably ammonia, the reaction became controllable and was greatly hastened, so that the formation of the resins of uniform compositions and properties became easy; and, secondly, that if this formation was treated in molds under heat and pressure, the hard insoluble variety free from porosity could be made successfully.

Before molding it is customary to mix in some kind of filler for most objects. Asbestos is a favorite for this purpose, and when used the product gives good insulation below 2,500

volts, and at temperatures up to 400 degrees F. it remains uninjured. Wood flour is also used as a filler, in which case temperatures up to 250 degrees F. are safe.

While the product is quite strong, it is not flexible to any extent and in this respect is not like hard rubber. Having no sulphur in its composition, metals may be imbedded in it safely. It shares with rubber an indifference to acids and alkalis and chemicals generally. It is practically fireproof, in which it has a great advantage over celluloid.

VULCANIZED FIBER.

When cellulose is treated with metallic chlorides—generally zinc chloride—it is partially dissolved, softened and rendered adhesive. Usually sheets of paper thus treated are stuck together to form a thick sheet. This is vulcanized fiber. It is molded by pressure, is tough and somewhat elastic and can be worked with tools. It may be considered as a substitute for hard rubber in some respects. Its great weakness is its susceptibility to moisture, and it requires a coating of waterproof composition.

EXPLAINING THE EMBARGO GUARANTEES TO DEALERS.

IN order that the manufacturers of automobiles and dealers who purchase any part of their supplies from the manufacturers of rubber goods may have a perfectly clear understanding of the guarantees which the rubber manufacturers have been obliged to give the British Government in order to secure a supply of crude rubber, the Rubber Control Committee of The Rubber Club of America, Inc., has prepared a letter setting forth the conditions included under the guarantee in detail. The intention is to supply the manufacturers with this letter in sufficient quantities to distribute to all their customers. The letter will be printed on the letter-heads of the Rubber Club, and will be furnished at the least possible cost. A copy of this letter—which is given in full below—was mailed by the club's secretary to all the manufacturers of the country on May 4. It is as follows:

IMPORTANT—CAREFUL ATTENTION REQUESTED. THE BRITISH RUBBER EMBARGO.

To Dealers in Automobiles, Automobile Supplies and Rubber Goods:

In order that the situation in which American tire and rubber goods manufacturers find themselves on account of Great Britain's embargo on crude rubber may be as widely known as possible, it has been thought best that full details should be given to all handlers of tires and rubber goods, in the hope that they would extend the fullest co-operation to the rubber manufacturers in carrying out both the letter and the spirit of the guarantees the latter have given to the British government.

During the past few years American rubber manufacturers have been obtaining their supplies of crude rubber in increasing measure from the Federated Malay States and Ceylon, both of which are British possessions, until at the present time over 50 per cent. of the raw material comes from these colonies.

On November 12, 1914, the British Government placed an absolute embargo on all exportations of crude rubber from the British Empire, and as a result this source of supply was completely shut off from rubber manufacturers in the United States until the following January when the British Government decided to allow rubber to come forward under certain conditions.

The modifications of the absolute embargo were brought about through the united efforts of The Rubber Club of America, Inc., and the Rubber Trade Association of London, whose joint committee appeared before the British Government and made the necessary arrangements.

In this connection it is to be noted that the United States Government was unable to give assistance to the rubber manufacturers in this country. It was found to be purely a question as between the American rubber manufacturers and the British Government. Regardless of the feelings of Americans in the matter, it was simply a case of purchasing rubber from the country producing it on the terms laid down by that country, or on the other hand being entirely cut off from that most important source of supply.

After nearly two months' negotiations, the British Government formulated the following rubber guarantee, which has been signed by all of the leading rubber manufacturers in the United States:

RUBBER GUARANTEE.

In consideration of your consenting to the delivery to us of crude rubber, we, hereby give you the following undertaking, which shall remain in force so long as Great Britain is at war with any European Power:

We will not export from the United States any raw rubber, reclaimed rubber, or waste rubber, whether the same has been imported from the British Dominions or not, otherwise than to the United Kingdom or to a British Possession.

We will not sell the rubber now delivered by you to any dealer or other person or persons in the United States, but will use it for our own manufacturing purposes.

All orders received by us for manufactured or partly manufactured rubber goods to be sent to neutral European countries shall be executed from stocks maintained by us in the United Kingdom or be executed by shipments to the United Kingdom and reshipment from there under license to be obtained for export therefrom.

We will not execute any orders for manufactured or partly manufactured rubber goods to be sent either directly or indirectly to any country or State at war with Great Britain.

We will not sell any manufactured or partly manufactured rubber goods to any person in the United States without satisfying ourselves that there is no intention on his part to export or resell the same for exportation to any countries in Europe other than Great Britain, France, or Russia, otherwise than by shipping to the United Kingdom and reshipping from there, under license to be obtained for export therefrom.

If we export any manufactured or partly manufactured rubber goods to a destination outside Europe not being in a British Possession, we will, prior to or simultaneously with the shipment, give you particulars of the goods so shipped and their destination.

All rubber tires exported by us or sold by us for export shall bear a distinctive name or mark, which we will communicate to you, so as to identify them as being our manufacture.

These are the conditions under which practically all manufacturers of tires and rubber goods are operating today. Any serious deviation from these terms of sale would possibly mean that the absolute embargo on rubber might again be placed in force, in which case it would doubtless be much more difficult to persuade Great Britain to accept the guarantees of American manufacturers. Such action would result in about 250,000 people directly and indirectly employed in the rubber industry being thrown out of employment, besides inflicting great hardship on all consumers of tires and rubber goods.

The rubber manufacturers of the United States, therefore, through their trade organization, wish to communicate these facts to you and ask for your co-operation in fulfilling the terms of the guarantees they have given to Great Britain.

You will observe that all rubber manufacturers must satisfy themselves that there is no intention on the part of their customers to export or resell tires or rubber goods for exportation to any countries in Europe, other than Great Britain, France and Russia, otherwise than by shipping to the United Kingdom and reshipping from there under license to be obtained for export therefrom. This is the paragraph that all handlers of tires and rubber goods should fix in their memory and be careful to observe, as it is being found that Great Britain is most desirous of preventing direct shipments from the United States to neutral European countries. All such shipments must be made by way of some port in the United Kingdom.

Yours very truly,

H. S. VORHIS, Secretary.

May 4, 1915.

In the cargo of the "Lusitania," of the Cunard Line, destroyed by submarine on May 7, there was only a small quantity of rubber—\$341 worth of rubber scrap, \$131 of manufactured rubber goods and \$347 of reclaimed rubber; making a total of \$819.

IMPORTANT RUBBER CLUB COMMUNICATIONS.

DURING the past month, The Rubber Club of America, Inc., has sent out a number of important communications to its members and to others in the trade. One of these circular letters explaining the Embargo guarantees to all rubber dealers and especially to automobile and accessory dealers, will be found in another column. In addition, three other communications have been issued by the Club, one referring to importations of unsold rubber and incorporating a letter on the subject from Sir Richard F. Crawford, another requesting the firm members of the Club to give their opinion regarding Government assistance to the merchant marine and the third and most important of them all, referring to the arrangement made by the Control Committee of the Rubber Club for warehousing unsold portions of rubber arriving in New York, together with an agreement which the importer must sign in order to have such rubber held in the warehouse, subject to his order. These documents are as follows:

April 30, 1915.

IMPORTATIONS OF UNSOLD RUBBER.

To Crude Rubber Importers, Dealers and Brokers:

The following letter on the subject of unsold rubber has been received from Sir Richard Crawford, who is representing the British Government in this country in respect to the rubber embargo, and it is hoped the trade will take careful note of its contents:

British Embassy, Washington.

April 16, 1915.

Mr. C. T. Wilson, Chairman, Rubber Control Committee, Rubber Club of America, Inc., 17 Battery Place, New York.

Dear Sir: I am to acquaint you that the importation from London under export licenses of large quantities of unsold rubber is entirely contrary to the spirit of the agreement. The British authorities dealing with this question would be glad of your cooperation in discouraging the accumulation of unsold stocks of raw rubber, and we should be glad to consider any suggestion you can offer which will enable the Committee to ensure that speculative permits are not passed.

Yours very truly,

(Signed) R. F. CRAWFORD.

The above is submitted for your information.

Very truly yours, H. S. VORHIS, Secretary.

May 18, 1915.

REFERENDUM ON THE UP-BUILDING OF THE UNITED STATES MERCHANT MARINE.

To the Firm Members of The Rubber Club of America, Inc.:

The Chamber of Commerce of the U. S. A. is canvassing the business communities of the country to ascertain opinions on the question of the upbuilding of the United States Merchant Marine. It is most necessary that crystallized business opinion in regard to the principles governing the future policy of the United States toward its Merchant Marine should find adequate expression at this time. When Congress meets there will undoubtedly be proposals for new legislation.

You are accordingly asked to register your opinion "in favor of" or "opposed to" the four questions which appear on the accompanying sheet.

As the ballot of The Rubber Club of America, Inc., representing the rubber industry, must be cast by June 22, 1915, in order to be counted, we would ask you to indicate your opinions on the accompanying questions at your earliest convenience.

Very truly yours, H. S. VORHIS, Secretary.

The four questions referred to in the communication quoted above, together with the vote which up to the end of May had been cast by the firm members, are as follows: Question 1, referred to the purchase and operation of merchant vessels by the Government. The vote was 33 in favor and 82 against. The second question covered Government ownership of merchant vessels, but with operation by private parties under leases. The vote was 33 for and 83 against. The third question referred to Government subsidies, sufficient to enable American ships to compete with foreign ships. The vote was 89 in favor and 25 in opposition. The fourth question covered Government subventions for the purpose of establishing mail and freight lines under the American flag to countries of commercial importance to the United States. The vote showed 106 in favor to 11 opposed.

THE WAREHOUSING OF UNSOLD PORTIONS OF RUBBER IMPORTATIONS.

The following communication states that arrangements have been made by the Rubber Club for the warehousing of unsold lots of rubber and includes a copy of the agreement which the importer wishing rubber to be stored for his account must sign:

May 25, 1915.

To Crude Rubber Importers, Brokers and Dealers:

Arrangements having been completed with the British Consul General at New York whereby unsold portions of rubber arriving here may be put into store, we beg to enclose copy of agreement which any importer wishing rubber to be stored must sign, and which must be filed with The Rubber Club of America, Inc., in conjunction with the manufacturers' guarantees for the sold rubber.

It must be clearly understood that this privilege is granted by the British Government solely for the purpose of assisting the importer who may have, at times, unsold portions of rubber arriving, but not for the accumulation of stock.

The Rubber Club of America, Inc., will make a charge, to be paid by the importer, of 25c. per case on rubber placed in store, which will be in addition to the 6c. per case paid by the manufacturer for the certification and recording of guarantees.

Very truly yours, H. S. VORHIS, Secretary.

AGREEMENT.

To The Rubber Club of America, Inc.:

Acting in our behalf and in order to meet the conditions and requirements of the British Consul General at New York as concerns the storing of rubber in public warehouses, by which arrangement he will permit parcels of rubber consigned to his order to be warehoused, we understand that prior to his endorsement to you of the bill of lading for purposes of clearing you must file with the Consul General an undertaking in form and substance as follows:

The undersigned, as agents for His Britannic Majesty's Consul General at New York, accepts the custody for the purpose of putting in store in his behalf the following rubber:

Number of cases.....	.....
Marks .....	.....
Quantity .....	.....
Grade .....	.....
Importer for whose account it is to be stored.....	.....

In consideration of the granting of this trust by H. B. M. Consul General at New York, The Rubber Club of America, Inc., will hold itself responsible for the delivery to the Consul General, as expeditiously as circumstances will permit, of a non-negotiable warehouse receipt made out to the order of the British Consul General at New York calling for aforesaid rubber.

We hereby undertake not to deliver the rubber above described, or any part of it, to any person or persons, or otherwise to dispose of the same without the written consent of the British Consul General at New York, during the period elapsing between the endorsement of the bill of lading to us by the Consul General and the delivery by us of the aforesaid warehouse receipt.

The Consul General will release any or all of the rubber so stored at the request of the owner upon the filing with him in the usual way of guarantees to his satisfaction.

THE RUBBER CLUB OF AMERICA, INC.,

By.....

Secretary and Treasurer.

We hereby agree that as long as you act in our behalf in this manner that we will save you harmless from any loss that we may sustain by reason of any acts committed by you or your agents in handling rubber for us in this way.

We further hereby agree to pay any and all public storage charges that you may incur in making Custom House entries and any and all weighing, trucking and warehouse charges and other expenses that may be incurred in the premises.

New York,

1915.

New Machines and Appliances.

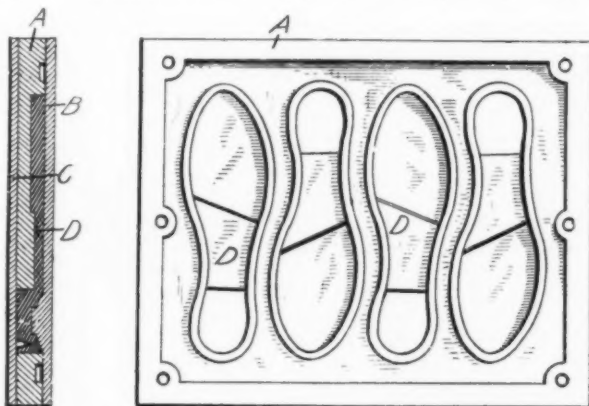
THE most important patents recently granted are illustrated and described in the following pages. Selection has been made of representative machines which show improvement in that particular branch of the trade to which they belong.

As an example, Landin's machine that covers rolls of friction tape with tin-foil is both novel and ingenious. The mechanical defects of single molds have been overcome and production increased by Hill's unit gang mold for rubber soles. Seamless tubing is made on an ordinary tubing machine with a special head so that soapstone can be applied to the interior of the tube without dust escaping to annoy the operatives. There is a British machine, by Bertram's, Limited, that makes mosaic carpet of various designs and colors in continuous lengths, and Bridge has patented a new cooling roll for mixers. A dipping and drying machine for making gloves, etc., has improvements that are recognized at once by manufacturers of druggists' sundries. Two separate patents provide for treating inner sole fabric and a new apron mechanism for mixing mills has been invented by Welton.

These and other devices are briefly described in the following paragraphs.

RUBBER SOLE GANG MOLD.

THIS invention provides strong molds that do not break easily and with interchangeable parts on which uniform pressure may be maintained, for producing a variety of soles. The plan view on the right shows the middle section of the mold *A* with the top and bottom plates *B* and *C*

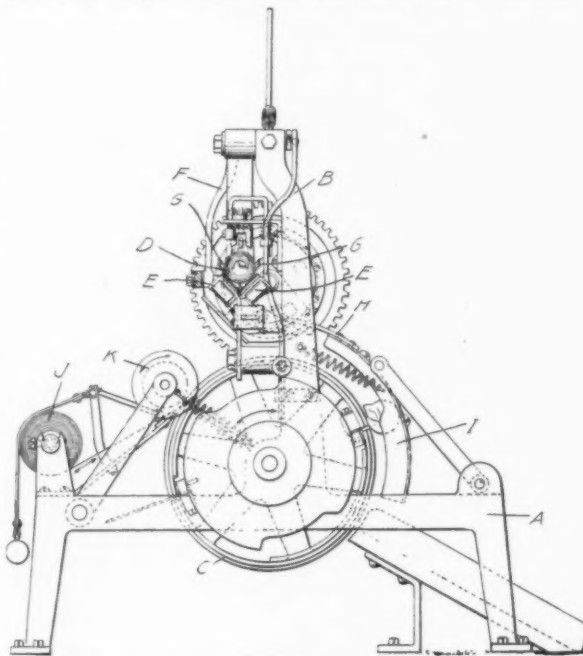


removed, while on the left is a vertical section showing the plates in position. In the arrangement of the four single molds *D*, shown in the drawing on the right, the toe of one mold is adjacent to the heel of the next, which gives greater strength to the heel portions of the forms. The molds are uniform in thickness with the middle mold, thereby preventing uneven pressure on the contour frames. [Charles H. Hill, United States patent, No. 1,136,336.]

MACHINE FOR COVERING ROLLS OF FRICTION TAPE.

The operation of the machine is as follows: A series of uncovered tape rolls is placed in the roll carrier, resting upon the upper laps of the endless feed bands. The tin-foil is passed under the feed roll and laid upon the periphery of the bed roll. This is set in rotation and the uncovered tape rolls are fed one by one to the holding jaws or arms that deliver them to a chute with guides which present the rolls in proper position above the bed roll. The tape roll is then pressed down on the

cut portion or strip of tin-foil on the bed roll, and is revolved, winding the strip of tin-foil thereon in the form of a

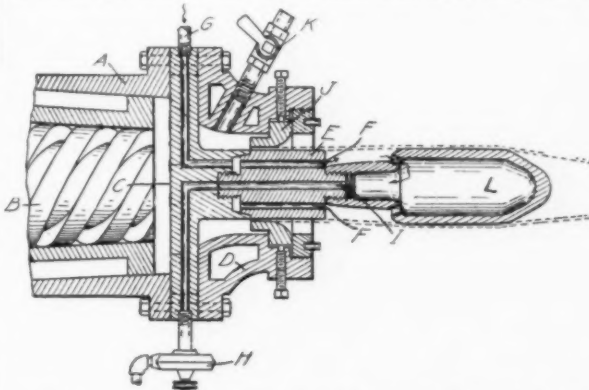


A—Side Frames. *B*—Upright Frames. *C*—Bed Roll. *D*—Rolls of Uncovered Tape. *E*—Roll Carrier. *F*—Roll Feed Lever. *G*—Roll Grips. *H*—Roll Presser. *I*—Folding Device. *J*—Roll of Tin-foil. *K*—Tin-foil Feed Roll.

cylinder having ends which project beyond the sides of the tape roll. A folding device folds these projecting ends against the sides of the tape roll, as it is carried through the passage from which it drops into the delivery chute. [C. J. Landin, assignor to Boston Woven Hose & Rubber Co., United States patent, No. 1,134,208.]

BLEECKER'S IMPROVED TUBING MACHINE.

The object of this invention is to make seamless rubber tubes in continuous lengths and at the same time apply soapstone to



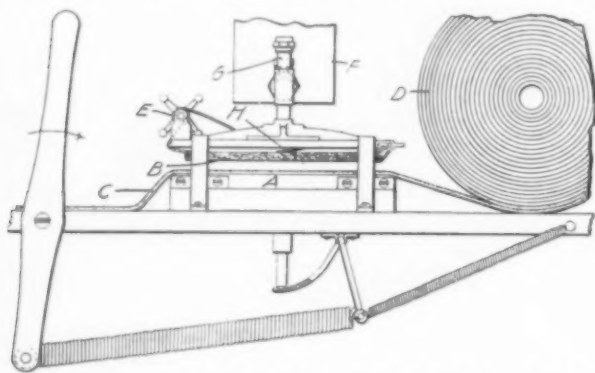
A—Cylinder. *B*—Stock Worm. *C*—Core Holder. *D*—Head Section. *E*—Cylindrical Core. *F*—Soapstone Inlets. *G*—Soapstone Supply Pipe. *H*—Air Pump. *I*—Soapstone Outlet. *J*—Ring Die. *K*—Relief Valve. *L*—Core Extension.

the interior. The illustration shows in section the head and part of the stock worm and cylinder. The compound is forced

by the stock screw into the head section, and then through the space between the ring die and the cylindrical core. The outer diameter and the thickness of the tube are determined by the die, while the inner diameter is determined by the core. The suction pump continuously draws the soapstone through the supply pipe and the outer inlets in the core to the interior of the tube, where it acts as a lubricant. From here it passes into the hollow core extension, and is returned to the source of supply through the outlet in the center of the cylindrical core. [A. Bleecker, assignor to the Portage Rubber Co., United States patent, No. 1,133,610.]

MACHINE FOR TREATING INNER SOLE FABRICS.

The machine in the illustration is for softening or rendering adhesive the coated surface of proofed fabric such as is used for making inner soles. Fabric coated with rubber has a tendency to curl, and it is, of course, difficult to apply the solvent evenly over the coated surface unless it is perfectly flat. For this reason this device is provided with a movable bed plate and a stationary solution pad of absorbent material. The fabric is fed between these two members, and the pressure applied by the bed plate smooths out the fabric while the solution is uniformly applied to the coated surface. [B. F. Chamberlin, Jr.,



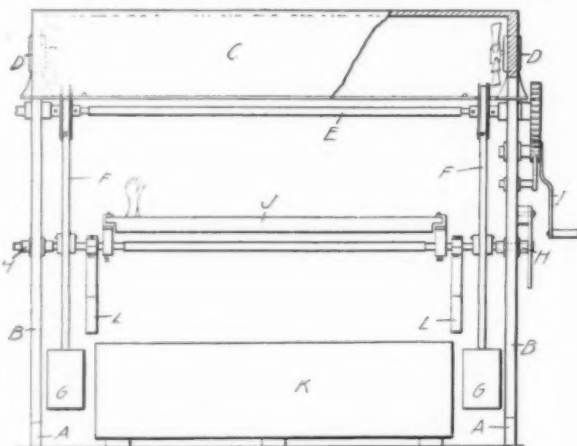
A—Bed Plate. B—Felt Solution Pad. C—Proofed Fabric. D—Fabric Roll. E—Solution Pad Adjustment. F—Solution Tank. G—Solution Valve. H—Valve Lift.

and J. N. Moulton, assignors to Massachusetts Chemical Co., United States patent, No. 1,131,993.]

RICHERT'S DIPPING AND DRYING MACHINE.

This invention provides a machine for making such rubber articles as are produced by repeatedly dipping forms in rubber solution and allowing the coating to dry between the successive dippings. The two side frames mounted on base plates support the bearings of the driving and dipping shafts and also

an air circulation. The dipping frame supporting a large number of forms is lowered by lifting belts operated by a hand



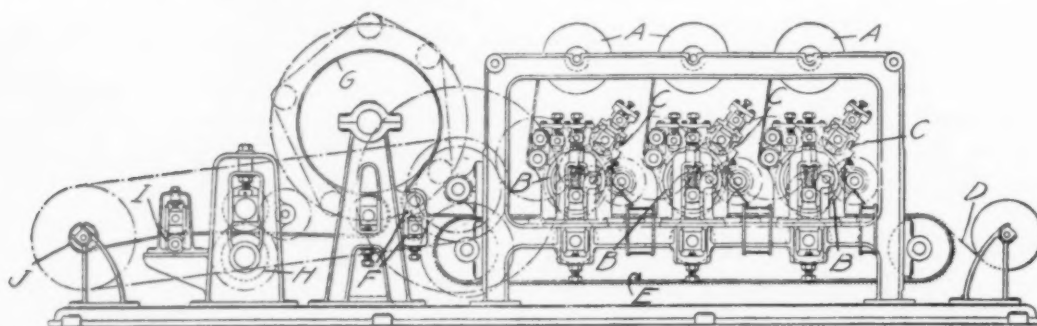
A—Base Plates. B—Side Frames. C—Fan Box. D—Fan Blowers. E—Main Shaft. F—Lifting Belts. G—Counterweights. H—Dipping Frame Shaft. I—Power Crank. J—Dipping Frame. K—Solution Tank. L—Dipping Frame Counterweights.

crank and is raised in the drying position by counterweights. [E. T. Richert, assignor to the Reality Rubber Co., United States patent, No. 1,133,820.]

MACHINE FOR MAKING RUBBER MOSAIC CARPET.

Rubber flooring is usually constructed of interlocking tiles of various colors and shapes, which are carefully laid and cemented together. Rubber carpet is also made with hand-stamped patterns, inlaid with colored rubber shapes of various designs. Now we have a machine that cuts out small cubes or squares from different sheets of white or colored rubber, assembles them together and forms a continuous length of mosaic carpet, which is wound in a roll ready to be vulcanized.

The rolls of colored stock A are supported by the side frames, and the sheets are simultaneously fed over the revolving cutting drums B. The peripheries of these drums are fitted with adjustable knives that are arranged to cut the cubes from the sheets as they pass between the drums and the presser rollers C. As the drums revolve, the cut cubes are delivered on a backing cloth D, and are held in alignment by the sharp points of an endless belt of card cloth E, penetrating through the backing cloth. The cubes and cloth then pass between the calender rolls F, and around a heated drum G, which softens the solution on the cloth and causes the cubes to adhere to it. After passing between the final calender rolls H, where the pattern is consolidated, and the edge trimming knives I, the mosaic carpet is



the drive gearing. Extending across the top of the machine is a fan box with electric fan blowers at each end for creating

wound up on the roller J, and is then vulcanized. [Bertrams, Limited, and R. F. Gillespie, British patent, No. 9,195.]

OTHER DEVICES.

INDICATING GAGE FOR INSULATED WIRE.—In the covering of insulated wire the rubber coating is sometimes applied in an irregular manner or it varies considerably in thickness. It is difficult to detect these variations, which usually occur gradually, resulting in several feet of imperfect product before the defect is discovered. The indicating gage will prevent such occurrences. When wire that varies in size passes between the standard gage rollers a sensitive pointer vibrates over a graduated scale, attracting the attention of the operator. [W. H. McGauley, United States patent, No. 1,133,300.]

COBB'S BRAIDING MACHINE.—His latest invention relates to machines for braiding tubular fabrics, and can be applied to any ordinary braiding machine. There is a supplemental mechanism or attachment whereby any desired number of warp yarns are introduced into the fabric. For this purpose there are as many shuttles as there are yarns to be introduced. These shuttles, located under the shed of interbraiding yarns, are projected upward through the shed by shuttle-throwing devices of novel construction. Each shuttle travels in a vertically extended raceway made in two sections with a gap between for the passage of the shed of braiding yarns. For controlling the shed it is confined between two rings located respectively above and beneath the shed, the space between forming the gap in which the braiding yarns travel. The approaching surfaces of these rings are preferably made sinuous, these edges drawing closer together in the paths of the shuttles and diverging between such paths. [H. Z. Cobb, United States patent, No. 1,133,364.]

DOUBLING AND CEMENTING FABRICS.—A machine has recently been patented by which materials such as leather, imitation leather, mohair and the like are cemented to a backing of cotton cloth. It has two rotary heated rolls and means for guiding two sheets of fabric from opposite sides over and between the rolls. A heated doctor applies the waterproof cement evenly to the surface of the covering fabric, which is then united to the backing fabric by passing between the heated rolls. [A. Leisel, United States patent, No. 1,133,440.]

APRON FEED FOR MIXING MILLS.—The object of this device is to return the material between the mixing rolls so that the mixing operation will be continuous. It also provides for throwing the apron out of gear or removing it entirely from contact with the front roll. The partially mixed rubber and compound passes down between the mixing rolls and falls on the apron, which carries it around the first roll as far as the apron is in contact with it. The compound adheres to the first roll, and is carried downward and between the two rolls, making a continuous operation. When the batching is complete the apron is dropped down out of the way and the compounded stock removed. [P. E. Welton, United States patent, No. 1,134,172.]

In a recent patent Welton covers several improved apron controlling devices and assembles the entire mechanism in a portable pan. The advantage in this is that the pan can be quickly adjusted under any machine, thereby converting it into a self-feeding mill. [P. E. and H. A. Welton, United States patent, No. 1,134,173.]

CEMENTING MACHINE.—In the manufacture of boots and shoes it is customary to skive the margin of certain parts of the upper and to apply cement to the skived margin, which is then folded. The cement must be applied evenly and quickly, which is the object of this invention. There is the usual cement tank, valve and cement-applying roller, driven by a belt, conveniently arranged above the machine table. Below this table a presser roll projects through an opening in line with the cement roller, which can be adjusted to the angle of the skive and presses the skived upper firmly against the cement applying roller. [John B. Hadaway, assignor to United Shoe Machinery Co., United States patent, No. 1,134,262.]

ARMORED HOSE.—Two half round wires are wound spirally around the hose—one with its flat surface and the other with its round surface in contact with the hose. [H. W. Goodall, United States patent, No. 1,136,329.]

INNER SOLE MACHINE.—The fabric is mechanically softened and longitudinal creases formed in it. Then it is made sticky by heat for application to the ribbed surfaces of innersoles. [James Meade, assignor to Plymouth Rubber Co., United States patent, No. 1,137,511.]

VULCANIZING FOOTWEAR.—A drum that supports six stick carriers upon which are fixed the lasted rubber shoes, revolves in a vulcanizing chamber. This machine will be described in detail in the July number of THE INDIA RUBBER WORLD. [T. H. Rieder, assignor to Canadian Consolidated Rubber Co., Limited, United States patent, No. 1,138,791.]

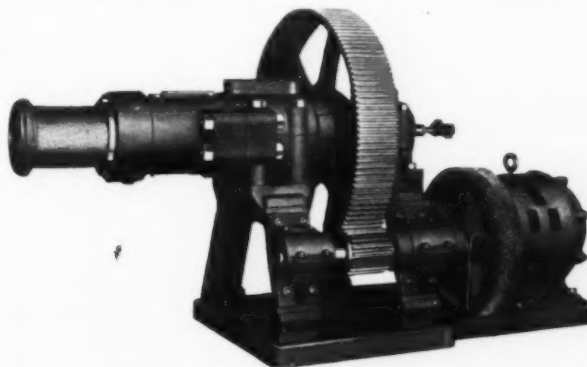
MASTICATOR ROLLS.—These are screw-like or spiral rotating blades, with convex surfaces that press the material directly towards the walls of the surrounding trough. This produces, with the rotary movement, a kneading action that effectively and rapidly works the mass into the required condition. [J. E. Pointon, British patent, No. 4,105.]

ROLL COOLING DEVICE.—A recent English invention relates to that class of rubber machinery in which cooling—and sometimes heating—the roll is necessary. The interior of the roll is divided longitudinally by a number of ribs, and is bored for a tightly fitting tube. The latter forms long chambers of the spaces between the ribs, and is also the central supply tube for the heating or cooling medium. The longitudinal chambers are connected with openings at each end so that water or steam circulates freely through the system. Thus the whole surface of the roll is cooled or heated as desired. [J. H. Nuttall and D. Bridge, British patent, No. 1,102.]

In comparing the above invention with the various American types, the similarity to Bragg's built-up roll and Brewster's and Norris' cooling rolls is noted. The longitudinal and connected chambers located near the roll surface and the central supply passage for the water or steam circulation are used in the Norris roll. Both Bragg and Brewster use a modified form of the same idea.

ADAMSON STRAINING AND REFINING MACHINE.

The new 8-inch reclaiming machine shown in the illustration is designed for large capacity and heavy duty. It is bolted to a continuous bed plate that supports at one end a motor and cut double helical reducing gear. The body of the machine is chambered for



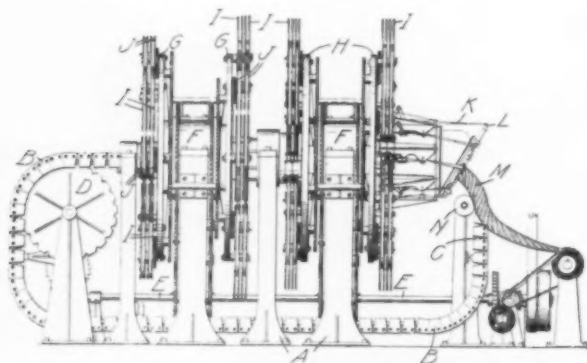
steam or cold water and is supported by heavy side frames bolted to the base plate. Journaled to the frames is the main driving shaft that drives the hollow steel stock worm through powerful cut spur gearing. The steel strainer head has unusual area, and an end plate with an efficient arrangement for holding the wire cloth. [The Adamson Machine Co., Akron, Ohio.]

New Tire Machines.

RECENT inventions pertaining to rubber tire manufacture have been both numerous and interesting. The following machines are evidence that unusual inventive skill is being consistently directed along the lines of increased efficiency. For instance, the Subers machine improves on the cord laying idea by automatically turning out tire castings in continuous lengths. Another interesting tire building machine performs a variety of operations that formerly were thought to be necessarily manual. The Thropp-de Laski tire-building machine was invented and is being built by practical rubber machinists. Tire bead cores are made from the roll of frictioned fabric by Stevens' latest machine. Gammeter makes the core first in a tuber, then covers it and forms the finished bead, while Thropp provides a ring template for centering the finished bead on the casing. Non-skid pneumatic treads are now made in molds and cured in the press with one operation, according to Sloper's British patent, while Finlayson's United States patent provides a mold for the same purpose. There are many other inventions of interest relating to tire manufacture, such as a tension device, impregnating machine, solid tire machine, several collapsible cores, etc., descriptions of which follow.

SUBERS' TIRE CASING MACHINE.

THE patents granted recently to Lawrence A. Subers relate to annular and tubular tire fabrics previously impregnated with rubber solution and made on an endless mandrel, which corresponds in cross-section with the finished casing. Later patents provide for a ribbon of metal inserted in a tubular

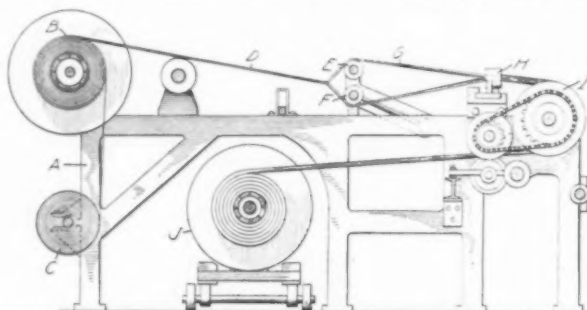


band, saturated with rubber solution, and made, on a special machine, into a tubular or sheet fabric of single thickness with raw edges, or one of double thickness with selvage edges, for hose, tires or belting.

The illustration refers to one of the former patents covering a machine for making annular tubular fabric on a curved mandrel. The three standards *A* support the frame of the machine and an endless mandrel *B* that travels on a T-rail *C* driven by sprocket wheel *D* from the main shaft *E*. The bearings *F* support the four reels *G* and *H* and the spools *I*, on which the adhesive fabric bands are wound alternately, with non-adhesive strips from the spools *J*. The fabric bands *K* mounted on the revolving reels are guided to the right hand side of the machine, where rollers *L* guide the strips over the slowly moving mandrel forming the tube *M*, which is slit on its inner surface by the circular knife *N*. [L. A. Subers, United States patent, No. 1,132,635.]

STEVENS' BEAD FABRIC TEARING DEVICE.

The preliminary tearing device is not shown here, as this is mounted on a frame in line with and on the right of the machine illustrated, which is the final tearing device. The preliminary device consists of clamps that firmly grip the front



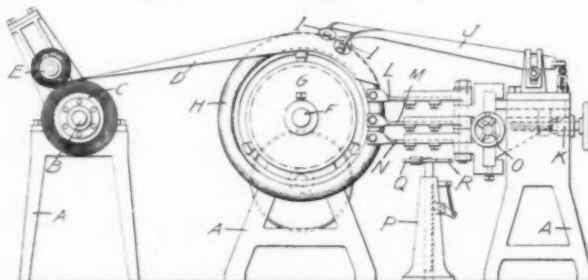
A—Side Frames. *B*—Fabric Roll. *C*—Liner Roll. *D*—Frictioned Fabric. *E*—Upper Tearing Roller. *F*—Lower Tearing Roller. *G*—Torn Strips. *H*—Forming Die. *I*—Bead Forming Sheave. *J*—Bead Spools.

edge of the cloth and are as wide as the strips into which the frictioned fabric is to be torn. The alternate clamps hold the fabric stationary, while the intermediate clamps are fixed to a movable bar which accomplishes the preliminary tearing when moved backward by the operator. The lever carrying the upper and lower tearing rollers is then swung in place, as will be seen in the illustration. The torn strips are released from the alternate clamps and passed around the lower tearing roller, while those from the intermediate clamps are passed over the upper tearing roller and are then united in sufficient number to form beads. When the machine is started the tearing action is continuous, and the beads are passed through the forming dies and the bead forming sheaves to the spools. [W. C. Stevens, assignor to the Firestone Tire & Rubber Co., United States patent, No. 1,134,293.]

PNEUMATIC TIRE MAKING MACHINE.

Clincher and quick detachable tire casings are made on this machine, which winds the fabric, applies the beads and practically finishes the casing mechanically instead of by hand, as is at present customary.

In making a tire the fabric strip is led from the supply roll and its end applied to the surface of the core. This is then



A—Side Frames. *B*—Fabric Roll Shaft. *C*—Fabric Roll. *D*—Frictioned Fabric. *E*—Liner Roll. *F*—Core Shaft. *G*—Chuck. *H*—Tire Core. *I*—Presser Rollers. *J*—Presser Lever. *K*—Lever Adjustment. *L*—Bead Applying Device. *M*—Bead Forming Device. *N*—Trimming Device. *O*—Saddle Adjustment. *P*—Vertical Stands (2). *Q*—Eccentric Rollers. *R*—Roller Hand Lever.

rotated and spaders are applied by hand to the fabric strip, pressing it closely against the under side of the core.

In some cases the tension on the fabric strip is relied upon, while in others presser rollers are employed to press the fabric

more firmly against the core. These rollers are mounted upon a forked lever and can be adjusted as the diameter of the casing increases, so that the same pressure is exerted upon the casing at all times. The rollers are placed obliquely, and one of them is located slightly in the rear of the other, the track of which it overlaps, so that the entire upper surface of the casing is subjected to the pressure of these rollers. For regulating the tension upon the fabric strip a friction bearing box is employed, which may be set to any desired degree of tension by means of screws.

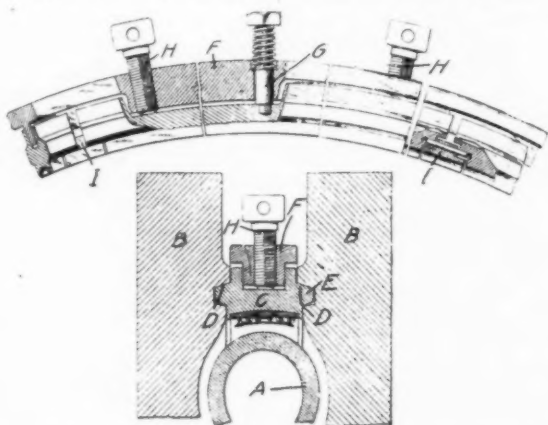
After a sufficient number of layers of the fabric (usually two) have been wound on the core, the customary beads are applied. If endless bead rings are used they are placed upon the peripheries of forms which are pressed against the partly formed casing. If a continuous bead stock is used the bead rollers are moved close up against the casing and guide the bead stock in place. When the bead is complete the stock is cut at the proper point so that the end will abut against the initial end of the bead.

After the beads have been attached, further layers of fabric are wound on the casing until sufficient thickness of fabric has been applied. To perfect the form of the casing at and around the beads forming rolls are employed. A padding layer of rubber stock is then rolled over the layers of fabric by the presser rolls, and a tread strip is applied. The casing is then finished and ready for curing. [T. J. Whalen, United States patent, No. 1,131,760.]

NON-SKID TREAD MOLD.

This device consists of the ordinary core and a two-part mold that forms the sides of the tire casing. The non-skid tread is formed by ring segments that are held between the upper and lower molds and are pressed against the rubber by bolts carried in a thrust ring.

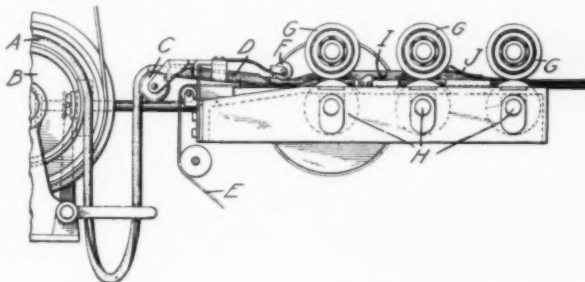
Referring to the drawings below, *A* is the core and *B B* the upper and lower mold parts. The tread forming ring *C* is composed of segments and has ribs *E* that align with the grooves *D* of the mold parts *B B*. Referring to the upper drawing, the tread forming segments are adjustably attached at their centers to the ring *F* by spring bolts *G*. The annular thrust ring *F* is drilled and tapped to accommodate the bolts *H*, which bear on the ends of each tread forming segment. The recesses formed in the ends of the segments are filled by the T-pieces *I*, which prevent the rubber from spewing. The core with the tire casing is placed in the lower half of the mold and the upper half is placed upon it with the tread segments be-



tween them. These are advanced by the bolts, compressing the rubber and forming the non-skid tread. The mold parts are then clamped together, which registers the tread sections. [Thomas Sloper, British patent, No. 2,498.]

TIRE BEAD FORMING AND COVERING APPARATUS.

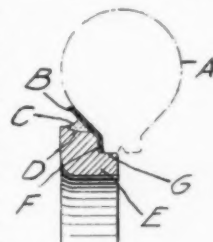
The complete apparatus consists of a tubing machine for extruding a bead core of desired section, and an endless belt for conveying it from the tubing machine to the covering



mechanism, which is shown in the illustration. The core *A* is conveyed from the tubing machine by the endless belt, which passes around the pulley *B*. It is then delivered to the covering machine supported by guide roller *C* and advance guide *D*. The strip of frictioned fabric *E* passes over guide rollers and underneath the core, which is pressed against it by the roller *F*. As the core and fabric pass between the presser rollers *G* and the forming rollers *H*, the bead is formed and the fabric folded over it by the guides *I* and *J*. [John R. Gammeter, assignor to The B. F. Goodrich Co., United States patent, No. 1,137,127.]

BEAD ADJUSTING DEVICE.

In making a clincher tire it is very important that the beads should be located exactly in the right position. This is accomplished by Thropp's invention after the following method: The tire casing *B* is laid on the core *A* in the usual manner. The bead is then placed in position on the shallow curved recess *D* on the bead adjusting ring *E*. The latter may then be moved laterally into position with respect to the core and the ring itself adjusted accurately in position by the entrance of the shoulder *G* within the inner wall of the core. When pressed laterally against the casing, the base of the bead will be brought into contact with it, causing the bead to adhere to the tire casing, which is formed of unvulcanized rubber. The bead adjusting ring may then be removed, leaving the bead in its proper position with respect to the core and the tire casing. [J. E. Thropp, United States patent, No. 1,131,173.]



OTHER DEVICES.

MOLD FOR NON-SKID PNEUMATIC TIRES.—This mold forms the non-skid tread and provides for the complete curing of the tire within the mold in a single operation. The casing, built up on the core, as usual, is placed in the mold, which is then closed. The tread mold—made up of four sections—is forced by a rotating ring against the rubber, forming the non-skid tread. The mold is then placed in a heater under pressure, and the tire, when cured, is removed from the mold by rotating the ring in the opposite direction. [A. W. Finlayson, United States patent, No. 1,132,250.]

A FABRIC TENSION DEVICE.—Two pressure rolls that revolve in bearings supported by two side frames are placed one above the other, and are adjustable vertically. Directly opposite these rollers is an idler roller journaled in the side frames. The fabric is passed around the lower roll and up between the pressure rolls, and then around the idler roller and back again between the pressure rolls. When the rolls are brought together friction is established between the fabric moving in one direction and

the same fabric moving in the opposite direction, producing the desired tension. [E. Nall, assignor to the Goodyear Tire & Rubber Co., United States patent, No. 1,133,309.]

MACHINE FOR WINDING BOBBINS.—This is a machine for winding tape or fabric on bobbins, to be used in wrapping open cure tires. The strips are moistened, straightened, smoothed and wound with uniform tension. [A. de Laski, assignor to De Laski & Thropp Circular Woven Tire Co., United States patent No. 1,132,076.]

TIRE BEAD WRAPPING MACHINE.—The endless core of the bead is made up of five wire strands. This is placed in the machine, which stretches and wraps around it spirally two overlapped layers of frictioned tape, grooved rollers at the same time giving the bead its desired shape. [F. W. Kremer, United States patent, No. 1,132,359.]

COLLAPSIBLE CORE.—The four sections of this core are beveled on their inner lateral surfaces, and are held in perfect registry by a single annular ring and eight cap screws. [P. and B. de Mattia, United States patent, No. 1,135,774.]

MOLD FOR MAKING LEATHER TIRE CASINGS.—Leather casings for pneumatic tires are made by forming a strip of undried chrome leather in a U-shaped mold. The projecting edges are turned inward, covering the beads, which are cemented and pressed in place on the casing by movable dies. [G. W. Bell, United States patent, No. 1,132,904.]

IMPREGNATING AND COATING MACHINE.—To prevent the formation of air bubbles when proofing fabrics, cords and cables, the air is first exhausted from the material, which is then passed through the rubber solution before exposing it to the atmosphere. [L. P. Destribats, United States patent, No. 1,135,777.]

A similar patent granted to the same inventor was illustrated and described in *THE INDIA RUBBER WORLD* January 1, 1914.

COLLAPSIBLE CORE.—Each of the four sections has a socket at one end and a projecting rib at the other. These engage and align the sections when they are brought together to form the core. On the inner surface of each section are slots that register with similar slots in the adjoining section. These receive the locking plates, which are held in position by taper pins when the core is assembled. To remove the core the taper pins are driven out and the locking plates removed; when the sections can be withdrawn from the finished casing. [George H. Naylor, United States patent, No. 1,133,445.]

THROPP-DE LASKI TIRE MAKING MACHINE.—The original application was filed January 24, 1912. It was divided and this application was filed September 19, 1913. The patent for the original application was granted December 1, 1914, and was illustrated and briefly described in *THE INDIA RUBBER WORLD* of January, 1915. The patent for the final application has just been granted. [J. E. Thropp, P. D. Thropp and A. de Laski, assignors to The de Laski & Thropp Circular Woven Tire Co., United States patent, No. 1,137,365.]

SOLID TIRE MACHINE.—This is a rolling machine with two power driven rolls. The upper roll is raised and lowered by worm and screw gearing, and can also be accurately adjusted so that it is parallel with the lower roll. In rolling the hard rubber foundation on the rim, the latter is hung on the lower roll and fastened in place by adjustable collars and set screws. The warmed up stock is fed to the machine by hand, and the lower roll is rotated, forcing the plastic material into the grooves, forming dove-tail ribs which secure the foundation to the rim. The foundation may be made of any required thickness within the capacity of the machine by raising or lowering the upper roll. [H. Henning, United States patent, No. 1,134,454.]

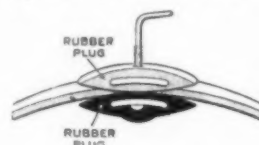
COLLAPSIBLE CORE.—This pneumatic tire core is formed of a plurality of sections fastened together by fixed and expanding

rings. [Guy E. Horton and Caspar S. Wagner, United States patent, No. 1,136,805.]

SHIELD FOR VULCANIZING MOLDS.—To prevent the formation of ridges on the inner surfaces of cord tire casings during vulcanization, a stiff flexible shield is placed between the pressure bag and the casing. [J. D. Tew, assignor to The B. F. Goodrich Co., United States patent, No. 1,137,097.]

AN INNER TUBE REPAIR PLUG.

The claim of the makers of the Sampson repair plug for inner tubes is that "it is totally unlike anything ever before devised," the intention presumably being to convey the idea that it is vastly superior to all other such devices. The inventor of this plug is



responsible also for the invention of the Sampson bicycle plug for roadside repairs on bicycle tires. This bicycle tire plug was made of metal, the new one differing in that it is composed largely of rubber. The plug consists of two

small metal discs covered with thick layers of rubber, as shown in the illustration. When a puncture occurs, the hole in the tire is stretched sufficiently to permit of the insertion of the under half of the plug, and the two discs are brought together by the wire thumb screw, which is then broken off. The pressure of the rubber sections against each other and against the edges of the tube is sufficient to ensure an effective and permanent cure. [Stevens & Co., 375 Broadway, New York.]

THE DAY SECTIONAL CASING.

This casing is really an outer non-skid tread for pneumatic tires, one that can be easily applied to either new or worn

tires. It consists of separate sections or pads made from specially prepared rubber and fabric vulcanized under hydraulic pressure. Thirty-three of these sections—each of which is placed across the tread, with the ends pressed down against the side of the casing, as shown in the illustration—are required to cover the outer circumference of a standard tire. When all the sections are in place they are securely held together by steel rings, which grip the ends of the sections. Any number of sections can be added, to fit the tire, and new one can be obtained to replace others that have become worn. [Day Sectional Casing Co., Chicago.]



THE AUTO-PED.

This is a huge roller skate, driven by a diminutive gasoline motor built in the front wheel. This unique vehicle is provided with pneumatic tires and will carry an adult at a speed of about 25 miles per hour. Gasoline is supplied from a tank built around a steering rod, which can be folded down and used as a carrying handle. [The Auto-Ped Co., New York.]

HUGE TIRES FOR MOTOR TRUCKS.

Pneumatic tires measuring 38 x 7 inches, 42 x 9 inches, and 48 x 12 inches, are now being marketed for use on motor trucks ranging in capacity from 1½ to 5 tons. These tires are made especially for use on trucks carrying passengers or fragile merchandise, and it is claimed that their advantage over dual tires lies in the fact that in case of a puncture the driver is bound to notice it at once, whereas with dual tires he might allow one of the tires to support the whole weight for many miles. These are probably the largest tires on the market. [The Goodyear Tire & Rubber Co., Akron, Ohio.]

What the Rubber Chemists Are Doing.

RESEARCH IN RUBBER RECOVERY. F. Kirchhof, in the "Kolloid-Zeitschrift," vol. 15, pp. 126-131 (1914), recounts a series of experiments demonstrating the possibility of recovering rubber from its tetrabromide, basing his conclusions on Harries' octadiene formula for rubber.

VULCANIZATION ACCELERATORS. R. Ditmar, in "Gummi-Zeitung," vol. 29, pp. 424-426 (1915), discusses the efficiency of this class of materials, including the old-time reliable litharge, although no mention is made of lime. It is stated that positive materials have always been used to increase the speed and decrease the temperature of vulcanization; also, to overcome vulcanization retarders or negative materials, such as oil substitutes. Speed of vulcanization, up to a certain point, is proportional to the increase of amount of accelerator. Beyond this point, in some instances, the added substance acts negatively and retards. In general, accelerators must be used in small quantity, as otherwise the quality of the product is injuriously affected.

Acting together in a compound, accelerators produce an increase of speed greater than would be indicated by the sum of the individual reactions. Litharge accelerates because of the heat of reaction resulting between it and hydrogen sulphide, or, according to equally good authority, to the heat liberated in forming lead sulphate and lead sulphide from litharge and free sulphur in the compound. Magnesium oxide is almost as widely used as litharge. Iron oxide frequently helps in compounds containing brown substitute. Manganese and copper oxides should be avoided, owing to their deteriorating action on the rubber.

The use as accelerators has been patented, including piperidine and its homologues, certain amines, urea derivatives, carbon bisulphide addition products and all organic bases having relatively large amounts of dissociation constituents. The latter group act as accelerators irrespective of constitution. Organic and inorganic compounds of ammonia may also be used. For the complete list of available accelerators given by Ditmar, the original article should be consulted.

VAT DYES FOR COLORING RUBBER GOODS. R. Ditmar, in "Gummi-Zeitung," vol. 29, pp. 85-87 (1914), reports the successful use of organic coloring agents in the manufacture of colored rubber goods. Of a hundred different dyes tried, in white, soft and hard rubber mixes, about one-third of the dyes gave good colors, which withstood vulcanization. More delicate shades were obtained than with the ordinary inorganic colors.

ANALYTIC METHOD FOR SULPHUR IN RUBBER, reported by R. Gaunt, in "Analyst," vol. 40, pp. 9-10 (1915). The method of determining sulphur by burning in oxygen and absorbing the SO_2 has not been applied to rubber because of the formation of volatile decomposition products, which may escape combustion or form explosive mixtures with oxygen. The following method obviates this difficulty: The rubber (0.2 to 0.3 gram), contained in a small hard glass tube closed at one end, is placed in a combustion tube, 30-5 c.m. long, drawn out at the rear and fitted into a small flask, which is connected with another flask by a small tube. In each flask is placed 25 c.c. of 20 volume hydrogen peroxide. A loose plug of platinized asbestos is placed in the rear of the combustion tube, in front of the constriction. Dry oxygen is led through the tube, and the mouth of the inner tube containing the rubber is heated by a burner. The rubber is then gently heated by another burner until melting and decomposition begin. The gas evolved ignites at the mouth of the containing tube and burns with a smokeless flame, if care be taken. The gaseous products are usually destroyed in about 30 minutes, and the residual mass is then heated

more strongly until completely burned, any carbon deposits being burned away at the same time by moving the burner. The sulphuric acid formed in the peroxide solution may be titrated with a standard alkali, or by precipitation, after decomposing the excess of peroxide by boiling with hydrochloric acid. Blank determinations must be made on the peroxide. In the case of rubbers high in mineral matters, sulphates in the residual ash should be determined. The results reported closely agree with those obtained by the Carius method.

RUBBER FROM CRUDE OIL.

It is reported that a Russian chemist has recently been able to secure from crude petroleum of the Baku oil fields a yield of 20 per cent. of adipic acid, the material being derived from certain fractions boiling between 208 and 223 degrees Fahrenheit. It is known that adipic acid is convertible, through its own amide, into butadiene. The discovery of an abundant supply of adipic acid is thus of great importance as a source from which to obtain synthetic rubber, since butadiene is simply converted into caoutchouc. California petroleum contains markedly similar fractions to those found in the oils from the Baku region, consequently there is a prospect of manufacturing rubber synthetically on the Pacific coast. In fact, the matter is said to be under experiment at present with that object in view.

PATENTED TREATMENT OF RUBBER.

PRESERVING RUBBER INNER TUBES with mixture of glycerol and corn syrup, in equal parts, applied as a surface coating.

ACCELERATING VULCANIZATION by the addition of one per cent. of piperidine or one of its derivatives before heating with a vulcanizing agent in the usual manner.

SEPARATING VULCANIZED RUBBER FROM FABRIC by soaking the rubber-coated material in certain hydrocarbons of the Dutch East Indies, especially rich in saturated hydrocarbons of the cyclic and alicyclic series. Contact in the cold causes the vulcanized rubber to swell in time, losing its elastic property and changing into a colloidal mass. In this state the rubber is readily separable from the fabric and may then be regenerated by means suitable to its nature.

CONDENSITE-RUBBER MIXTURES SUITABLE FOR ELECTRIC INSULATION CABLES. Halogen substitution products of naphthalene are found to facilitate the mixing and combination of sulphur and rubber in the vulcanizing process, and they remain in the vulcanized product as a solid solution with modifying properties. The materials bind well and are but slightly inflammable. Hard rubber mixtures by this process are said to be less brittle than ordinary, even at low temperatures.

IMPREGNATING MATERIAL WITH RUBBER.—Reclaimed or regenerated rubber is adapted for impregnating fabrics by reduction to emulsions with solvent and water. If emulsions containing only regenerated rubber are used, the coated material must be dried before vulcanization.

IMPROVING LOW-GRADE CRUDE RUBBERS. The material is treated direct or after solution or softening with one or more alkali metals or their alloys—hydroxides or alcoholates in the dry form at temperatures not exceeding 212 degrees Fahrenheit. Regenerated rubber may also be treated in the same way. The rubber to be improved is intimately mixed on rolls in the proportion of 100 parts rubber with 5 parts of sodium, raising the temperature of the rolls to about 150 degrees to 160 degrees Fahrenheit. In a few minutes the mass begins to acquire the properties of high-grade rubber, not adhering to the rolls and working readily. The material is sheeted thin and allowed to remain for 24 hours at about 150 degrees. The sodium can be recovered after the operation is completed.

RUBBER AND EGG ALBUMEN. An emulsion is made by mixing three parts of fresh egg albumen with one part of a solution of crude rubber in benzine. This mixture should stand till thoroughly dried before further compounding on rolls with sulphur and other compounding ingredients for hot vulcanization.

VULCANIZING NATURAL OR ARTIFICIAL RUBBER. An English patent (No. 4,263, 1913) has been granted for a process of vulcanizing natural or artificial rubber. It consists of acceleration by the addition of small amounts of *p*, nitrosodimethylaniline or its homologues. A mixture of 100 parts rubber, 10 parts sulphur and one-half part of the above accelerator can be vulcanized in twenty minutes at 285 degrees Fahrenheit, as against one hour without the accelerator.

OBSERVATIONS AND COMPARATIVE TESTS ON THE LATEX OF WILD AND PLANTATION HEVEA.

The work of F. Rippean in this connection confirms the view that the high quality of Brazilian hard cure Pará is due to coagulation by the carbon dioxide present in the smoke employed. The author found that in coagulating *Hevea* latex by means of carbon dioxide obtained by burning charcoal a product was obtained equal to plantation smoked sheets, and it was also free from the impurities which impart to the latter its dark color. The process, which is said to have many advantages, is not easy to carry out in practice. Precautions mentioned include not allowing coagulation to occur naturally nor hastening by heating, or by addition of acids. The coagulum must not be subjected to mechanical working. Good results were obtained by the addition of creosote to the latex.

In the "Journal of the Society of Chemical Industry," April 15, 1915, pp. 34-37, W. A. Caspari writes of his researches in the behavior of colloids towards pure and mixed liquids. His results show indications, from experiment, that discontinuity between caoutchouc-benzene solution and caoutchouc-benzene gel exists in the neighborhood of one volume of caoutchouc and six volumes of benzene.

It is significant that the caoutchouc employed absorbed about six volumes of benzene before passing into solution.

MEASURING THE IMPERMEABILITY OF PROOFED CLOTH.

Cloth waterproofed by rubber proofing, impregnated with alum or other salts, is not completely impermeable to water. An instrument for determining the degree of impermeability has been devised. As described in a recent communication to the Society of Dyers and Colorists of England, it consists of a copper cylindrical box, to which are attached a glass measuring tube and a rubber bulb. On the top of the box are fixed (by means of two screws) two rings, one of copper and the other of rubber.

At the beginning of the experiment the box and the bulb are filled with water, and on the top of the box is fixed a piece of the cloth to be tested. By pressing the bulb the height of water in the glass tube is increased, and when the pressure is sufficient (20-30 cm.) small drops are observed to form on the surface of the cloth. The height of the water column measures the impermeability of the cloth.

THE SIROCCO-STURTEVANT INFRINGEMENT SUIT.

Seven years ago the Sirocco Engineering Co., which was afterwards absorbed by the American Blower Co., brought suit against the B. F. Sturtevant Co., claiming infringement of the Sirocco patents. Verdict was given to the American Blower Co. by the lower court and was appealed. Last December the Supreme Court of Appeals of the second circuit, which is the highest court in the land that can pass upon patent litigation, returned a verdict in favor of the B. F. Sturtevant Co., reversing the decision of the lower court. The court not only stated that the Sturtevant multivane fan was not an infringement of the Sirocco fan, but took the ground that the Sirocco fan patents were not valid.

TEST FOR FINENESS OF PIGMENTS.

UNIFORM texture and dependable physical properties in high-grade rubber goods are influenced to an important extent, although not entirely controlled, by the degree of fineness of the mineral compounding ingredients employed in the mixing. The rubber manufacturer is also interested in the fineness of his pigments as a measure of economy, because the minuteness of the particles of a pigment is an important factor in extending its coloring power. To the paint manufacturer the problem of fineness of grinding is possibly of even greater importance, because it affects not only the efficiency of his own grinding machinery but the working qualities and color value of his product.

In the rubber, as in the paint trade, material is customarily purchased on an envelope sample representing the goods, and, speaking only of the rubber trade, the goods are commonly used without any further ado; except, of course, that in the case of special high-grade or otherwise important mixings, resort is had to sifting the dry ingredients through a fairly fine mesh to facilitate mixing and to insure removal of accidental impurities.

This is to be commended as a precautionary measure. It should be preceded by a careful standardized test for the acceptance of the various ingredients. In a recent issue of the "Oil, Paint and Drug Reporter" C. D. Holley and J. C. Brier have published their method of test for fineness of dry pigments, with tables showing the results obtained on a variety of materials, most of which are found among rubber makers' supplies.

The authors state that deciding upon a suitable degree of fineness of particles and maintaining an accepted standard in this respect leads to continued controversy between the manufacturer and the sources of his supply. This is due largely to the fact that the envelope samples, on which goods are purchased, do not fairly represent the deliveries. The necessity thus arises for a standard basis of fineness that can be designated numerically, and a standard screen has been employed for such measurement, having 350 meshes per inch, or 122,500 apertures per square inch. Such a screen is extremely efficient in separating particles of material expensive to grind. It has been demonstrated that particles which will pass through a 350 mesh undergo but little actual grinding in the paint mill, whereas the particles retained on such a screen, even though the percentage is comparatively small, dull the mills very rapidly and much reduce their output.

Weaving the material for the standard screen is difficult and expensive because of the precautions necessary to be observed to secure a uniform 350 mesh each way. Its manufacture has been successfully accomplished by the Multi-Metal Separating Screen Co., of New York. The wire used in its construction is vanadium bronze, one one-thousandth of an inch in diameter. The spacing of the warp is regulated by a reed consisting of 350 teeth per inch and uniformly spaced. The reed measures 36 inches long and contains 12,600 teeth. During the weaving the warp wires are kept stretched to the limit of their endurance to prevent shifting during the process of manufacture. The cross wires are placed at equal distances from each other in the weave, and the operator of the loom checks this spacing under a magnifying glass every eighth of an inch. The resulting fabric has been found sufficiently accurate for the intended purpose.

The method of testing a pigment with such a screen is simple and expeditious. A so-called master screen is kept as a standard, and whenever a new one is secured a practical test of the accuracy of the new screen is made by using both screens with a pigment that has a considerable percentage of coarse particles.

A gram sample of the pigment under examination is washed through the screen under the water tap, using a soft 1-inch brush to break up the lumps, brushing continually until only the coarse particles remain on the screen, which is then wiped dry on the under side in order to remove as much moisture as possible, then dried on a steam oven or hot plate. The dried residue remain-

ing on the screen is then weighed. If difficulty is experienced in getting the water to run through the screen when beginning a determination it is readily started by gently rubbing the under side of the screen with the fingers. As regards size, a screen 6 inches in diameter has been found very convenient.

By this test the manufacturer is enabled to put a definite numerical limit on the quantity of coarse particles he will permit in his raw materials. It also gives the pigment manufacturer a means of standardizing his manufacturing operations and of producing a uniform product.

The tabulated results of the author's tests by this method, conducted on commercial shipments of pigment, show wide variations in degree of fineness between lots of the same material supposed to be uniform. Among the materials represented, of interest to rubber manufacturers, are iron oxide, graphite, asbestos, china clay, silica, whiting, Paris white, ultramarine, white lead, Venetian red and others employed in the paint trade.

A modification of the above test, recommended in the case of calcium and manganese oxides, consists in using in place of water for washing, a basin of naphtha, placing the screen therein so it will be covered to the depth of half an inch, brushing the material through in the usual manner and finally washing off the adhering particles from the brush by means of a naphtha wash bottle.

The amount of service that can be expected from one of these screens is limited where a high degree of accuracy is required, especially where the pigments tested are strongly abrasive, such as silica and iron oxides. After one hundred determinations the screen should be tested against the master screen at frequent intervals. A stock of standard pigments is maintained for comparison with shipments, using the same screen for test purposes. For rapid testing of large shipments several standard screens are employed on composite samples representing packages in unit groups.

The standard maximum limit for particles coarser than 350 mesh in pigments for paint manufacturers' use is 2.7 per cent. No maximum limit of size is prescribed because of the further reduction by grinding in the process of paint manufacture. The figures shown in the tabulations presented by the authors demonstrate that their standard is practically attainable and might even be restricted to 1 per cent. without imposing undue hardships on the pigment manufacturers.

MINERS' ELECTRIC LAMP.

The illustration shows a new miners' electric lamp that is said to be safe, strong, light in weight, simple in design, efficient in operation and of ample capacity. The outfit consists of a lead

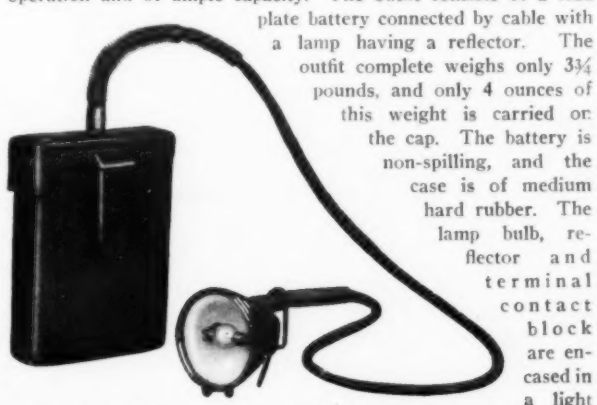


plate battery connected by cable with a lamp having a reflector. The outfit complete weighs only 3¾ pounds, and only 4 ounces of this weight is carried on the cap. The battery is non-spilling, and the case is of medium hard rubber. The lamp bulb, reflector and terminal contact block are encased in a light

drawn steel shell. A rubber gasket between the reflector and the glass renders the case waterproof. The cable consists of two braided strand rubber-covered conductors, each having a steel piano wire at the center. These are twisted together and

then heavily rubber covered, to render the cable strong, well-insulated and free from kinks. [General Electric Co., Schenectady, New York.]

INTERNATIONAL TIRE STANDARDS AND THE S. A. E.

At the meeting of April 20-22, at Detroit, of the Society of Automobile Engineers, the International Standards Division of the Society placed particular emphasis on the necessity for educational literature to present to the attention of foreign interests the advantages of international solid tire standards, and it was agreed that the Institution of Automobile Engineers and the Society of Motor Manufacturers and Traders of England should be consulted in this connection and their assistance obtained.

This division of the S. A. E. is composed of members resident in this country and abroad, and its object is the obviously beneficial one of harmonizing dimensions of American and European solid and pneumatic tires and making such tires interchangeable throughout the world. The solid tire situation has been selected for first attention. Standardization of the mounting of solid tires on motor trucks has already been effected, and the society has recommended concentration upon three diameters of tire only—32, 36 and 40-inch—as a means of reducing tire cost and to bring about the carrying of tires in stock at all necessary places. The majority of the American truck manufacturers are now using tires of these three diameters exclusively, in 3½, 4, 5 and 6-inch widths.

A WESTERN OPINION ON FIRE HOSE.

In an article on the subject of fire hose in the April quarterly of the National Fire Protection Association, Fire Marshal Harry W. Bringham, of Seattle, Washington, says: "With anything from a hand engine to a complete waterworks system, a fire department should use for throwing water only the standard hose of 2½-inch interior diameter. The saving in cost of smaller sizes counts for little in comparison with the disadvantages. Under conditions in which one pound of pressure is lost by friction to each 100 feet of 2½-inch hose, about three pounds are lost in 2-inch and more than ten in 1½-inch."

Continuing, he says that rubber, or "canvas" hose is more expensive than cotton hose, heavier, less pliable and not so strong, but that, on the other hand, there is no outside fabric and nothing to dry after using, hence a double supply for each hose cart is not needed. He states that first-class rubber hose has lasted in volunteer fire departments longer than high-grade cotton, with very little care, but that only the best quality can give such results. Cotton hose, he claims, is strong, flexible and the popular favorite, but the fabric must be carefully cleaned and dried after using, so that an extra supply should always be kept on hand to put on the cart or reels while this is being done. He says that there can hardly be too much care given to cotton hose—that as soon as the lining gives way the hose becomes weak at that point and worthless, and that the lining itself is best kept cool and moist.

In conclusion, he recommends the use of the specifications approved by the National Board of Fire Underwriters, to hose purchasers, as being reasonable and fair.

MOTION PICTURES OF TESTS ON RUBBER COVERED WIRE.

The National Fire Protection Association has recently prepared a series of motion pictures illustrating the tests carried on at the Underwriters' Laboratories in Chicago. These pictures are available for use in educational work in connection with accident prevention. The Laboratories' tests on rubber-coated wire are very completely covered in these pictures, which show engineers making the measurements prescribed in the National Electrical Code, preparing samples for voltage breakdown and wrapping tests, and such other features as can well be illustrated.

New Rubber Goods in the Market.

THE NEW YORK TRAFFIC SQUAD IN WHITE RUBBER UNIFORMS.

AN experiment of importance to the rubber trade is now being made in New York City. It consists in trying out a new rainy day uniform for the police traffic squad. A certain number of these men have been allowed to discard their black helmets and raincoats, and in their place to don white rubber uniforms, which distinguish them at a very considerable distance and assist both officers and drivers of vehicles in the regulation of traffic. The illustration shows a traffic policeman in one of the new uniforms, with boots, coat and cap cover all of white rubber. These uniforms have been submitted as samples, following a suggestion made in a recent traffic conference at New York police headquarters on complaints that drivers were unable at any distance on foggy or rainy days to distinguish policemen from street railway employes and pedestrians. This is an argument that can scarcely be offered in excuse for violation of traffic regulations or orders at the corners presided over by these white-clad policemen. Should the experiment work out to the satisfaction of the department interesting possibilities would be opened to dealers in rubber goods not only in New York, but in all other large cities. [The B. F. Goodrich Co., Akron, Ohio.]



Copyright Underwood & Underwood, N. Y.

"TWO-PART" FIRE HOSE.

Fire hose made in two parts, an outer casing and an inner tube, either of which can be repaired or replaced when worn, is a new and decidedly interesting development. The lining or inner tube is made specially strong at either side, where the bend comes, by reinforcements of rubberized duck, the spaces between giving it elasticity. This is to overcome the liability of hose to crack at the sides when folded over. It is also made strong at the bends or where it is turned back at each end of



the wagon, where the severest strain comes. This lining is inserted in the cotton jacket, to which it is fastened only at the couplings.

Not only can the inner tube be removed and a new one substituted, but it can be repaired, exactly as a tire tube, while in the event of injury to the casing from burning or any of the

various accidents to which it is liable, it can be replaced at about half the cost of the hose. By this mode of manufacture, also, a new lining can be supplied at nominal cost for any fire hose now in service in which the lining has become worn or useless. The manufacturers believe this new hose to be durable, practical, economical and a great advance in the art of hose manufacture. [Chicago Fire Hose Co., Chicago.]

TIRE INFLATING AND GAS TUBING.

The accompanying illustrations show two new types of flexible tubing. The first, or tire inflating type, is made with an armor of interwoven galvanized steel wire over a heavy rubber tube. This armor protects the rubber tubing, enabling it to stand a pressure up to 200 pounds, without in any sense decreasing its



flexibility. The other is a new type of rubber packed flexible metal gas tubing. The sides of the metal strip are brought close together in the winding, and a rubber thread lies in the groove thus formed. This tubing has been brought out to meet the great demand for a flexible metal gas tubing that will not leak. It is different in contour from the usual American type, following in style the German product—than which it is said to be even a little more flexible—now unobtainable on account of war conditions. [Breeze Carbureter Co., 250-252 South street, Jersey City, New Jersey.]



DENTAL POLISHERS AND MEDICINE CUPS OF RUBBER.

In dental work a rubber polisher, attached to and operated by a mandrel, is applied to the teeth, the soft rubber surface spreading itself out and conforming to their contours. A screw embedded in the soft rubber forms the means by which it is attached to the mandrel. These polishers are made in several different shapes, so that every portion of the tooth can be reached. The small cut herewith shows a new type, called the "B. S.," for use in polishing the necks and roots of teeth. Another rubber device in use in the dental office is the counter-irritant cup, a soft rubber suction cup for the application of medicines to the gums over the roots of teeth, after the filling of root canals and in cases of inflammation. The rubber suction cup, with its inner or concave surface medicated as required, is applied to the gums, the remedy proving much more effective than would be the case were it simply applied and then allowed to spread over the mouth.



Purified gutta percha is the basis of "Oleo-Percha," a composition described by its makers as "the one perfect canal sealing and the only root sealing made from the best grade of pure gutta percha." This preparation is made by a non-secret formula, the gutta percha being purified by methods peculiar to this particular company. [Young Dental Manufacturing Co., St. Louis, Missouri.]

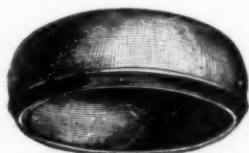
RUBBER STAMP ACCESSORIES.

The stationery stores constitute an important market for rubber goods, the office use of rubber being very large, as also the variety of articles comprising lines of rubber goods for the stationers' trade. Here are shown three new and extremely



useful office specialties. One is a stamp and pad cleaner, something that is sure to be highly appreciated. With the exception of the handle, this is made entirely of rubber. On one side it is a brush, with hexagonal rubber teeth for cleaning the rubber stamp, while on the other side is a three-blade rubber scraper for cleaning the ink pad and also for distributing the ink when reinking the pad.

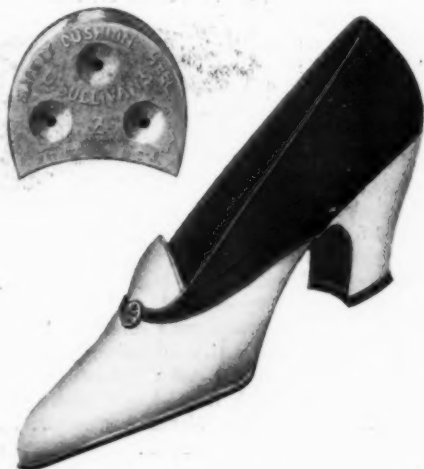
Another device is the rubber hand protector. Everybody who has operated the wheel stamps so largely in use in offices for numbering, making folios, etc., knows what a strain their continued use is on the hand. To relieve this strain this cushion of soft rubber is slipped over the top of the stamp, being adapted to fit all stamps of



this variety. The third illustration is of a rubber base for daters such as are used in railroad offices, and under corporation and other seals, check protectors, etc., to prevent slipping and scratching of the desk. [The J. F. W. Dorman Co., Baltimore.]

**THE NEW O'SULLIVAN HEEL.**

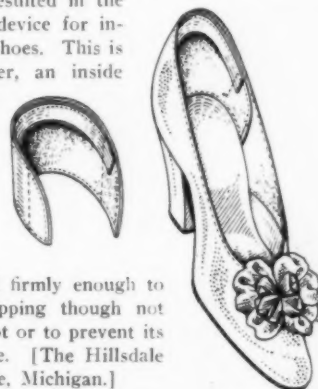
The rubber heel as a rule has not been a thing of beauty, though American heels have perhaps been the least noticeable in this respect. As an example, the English revolving heel added nothing to the appearance of the shoe and was never very popular in the United States. The latest advance in rubber heels comes through the O'Sullivan company, which has provided dainty rubber heels, in colors, for women's shoes. They are black, tan and white and



can be put on the latest fashionable heels and finished so that they are practically indistinguishable from leather. [O'Sullivan Rubber Co., 131 Hudson street, New York.]

A RUBBER BAND TO KEEP THE SHOE IN PLACE.

The annoying tendency of low shoes, and especially pumps, to slip at the heel, with the incidental annoyance of worn hosiery due to this slipping, has resulted in the introduction of a non-slip device for insertion in the heels of low shoes. This is the D. & B. Shoe Retainer, an inside counter-shaped affair made of sheepskin and rubber and gummed at the back for quick and easy attachment to the shoe heel. A rubber band is stitched in the top of the retainer, as shown in the illustration, this band gripping the heel firmly enough to prevent the shoe from slipping though not tight enough to hurt the foot or to prevent its easy insertion into the shoe. [The Hillsdale Shoe Retainer Co., Hillsdale, Michigan.]

**DOMINION RAINCOATS.**

In recent issues of THE INDIA RUBBER WORLD there have been illustrated up-to-date raincoats made in the United States. The illustrations herewith show similar garments in styles just brought out by a Canadian rubber goods manufacturing concern and which have been approved by Canadian consumers. The man's coat, which is produced both in lightweight cashmere and in tweed, is for the automobilist, being made with a full skirt, designed to completely cover the knees when driving. It has a military collar and raglan sleeves with very deep one-piece scye

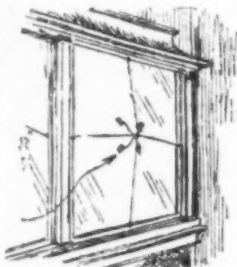


to give free arm movement. The seams are double strapped and stitched, inside and out. And to further distinguish it from the ordinary and commonplace it has been given the name of "Kitchener-Special."

The little girl's outfit includes a detachable hat, as shown, with a shield front and drawn in with elastic at the back to fit close to the head. The "Duchess" coat for women has the Inverness, or wing sleeve, for ventilation. It is made in lightweight plain and fancy single texture cashmere, in silks, in gabardines and in Donegal tweeds. It is stitched throughout and cemented, has a half-roll collar, is ornamented back and front with buttons and is piped with velvet around the arm, back, front and collar, making an altogether attractive rainy-day garment. [Canadian Consolidated Rubber Co., Limited, Montreal, Quebec.]

A SPIDER WITH RUBBER FEET.

The blast buffer is an invention for the protection of plate-glass windows in buildings liable to vibration from blasting or other causes. It is made of bent steel rods, to the four ends of which are attached flat steel pieces 2 inches long and 1 inch wide, and covered with rubber pads. It is held in place against the plate glass by wire rods attached to eye screws in the window frame, just enough tension being applied to resist vibration. It is applicable alike to the inside or outside of the window, or in extreme cases, or where the window is of exceptional size, it is used on both sides, with the pads directly opposite each other on the glass.

**A NEW SIMPLEX BATTERY-METER.**

The No. 4 is a new type of battery-meter especially adapted for the use of automobilists in testing the strength of battery solutions. The use of the rubber bulb is in drawing a sufficient quantity of the solution into the battery-meter to float the hydrometer, the reading being taken by noting the point on the scale in the stem at which the hydrometer floats. A fully charged battery should show a density of 1.280, and would be exhausted at 1.150; one which reads 1.250 when fully charged is exhausted at 1.100. The solution in batteries which show at full charge readings higher than 1.300 or lower than 1.250 should be diluted, in the one case, and in the other, strengthened by the addition of a solution of sulphuric acid. This new type is 10½ inches in length, and is furnished in a wooden box with a hinged cover. Extra or worn parts, including the rubber bulb, can be supplied at any time. [Simplex Hydrometer Co., Newark, New Jersey]

**A NEW RAJAH SPARK PLUG.**

The special features which distinguish the new waterproof Rajah spark plug from the regulation device of its kind manufactured by this company, are the special nipple covering the clip terminal on the cable and the protecting part screwed to the plug bushing—this latter being made of a hard rubber substitute of high heat-resisting properties. The company guarantees this plug—which is furnished in all the standard sizes, with a Rajah regular terminal to fit any cable, or with ferrule terminals where a sample of cable is supplied—to be absolutely waterproof. [Rajah Auto-Supply Co., Bloomfield, New Jersey.]

**RUBBER TOP LIFTS FOR WOOD HEELS**

According to a late issue of the "Boot & Shoe Reporter," the idea of a half or full Louis heel with rubber top lift has been developed to a considerable extent in connection with the manufacture of women's shoes, and concerns making rubber heels are producing these lifts for the wood heel makers. Additional elasticity over the old style wood heel with leather lift, with consequent increased comfort, is claimed.

TIRE ALARM.

American rights have been secured in a French device known as the "Cri-Cri," which is designed to notify motorists of the softening of their tires. One end of a steel strip comes in contact with the side of the tire, the other is held fast in a clamp that hooks under the rim and is braced against the felloe of the wheel. When the tire becomes soft the strip buckles, making a sharp, metallic noise. [S. S. Semler, Box 308, Rolfe, Iowa.]

THE DU-FLEX SOLE WITH THE "RESISTOE" TIP.

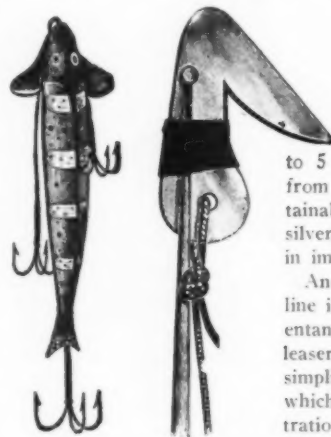
The manufacturers of Snowflake Du-Flex soles have brought out a novelty in this connection in the form of a white sole with a black "double wear" toe made of tough, fibrous compound. This tip is not veneered, but is a part of the sole, extending through its entire thickness, the vulcanization of the curved, welded union insuring a joint which the makers guarantee to remain intact and not to pull apart. Du-Flex soles may be applied to the shoe with the same short stitch that is used on the leather sole. [Avon Sole Co., Avon, Massachusetts.]

**NEW MILLS FISHING SPECIALTIES.**

A new phantom minnow has appeared, slightly in advance of the season for black bass, for which it is especially recommended, but just in time for pickerel fishing, in which its use will be appreciated. It is made of silk, coated with rubber, in sizes from 1¾

to 5 inches long, and retails at from 35 to 75 cents, being obtainable with brown spots, blue, silver, with light green stripes and in imitation of whitebait.

And for the fisherman whose line is inclined toward distracting entanglements, an improved "re-leaser" is now being offered, the simplicity and practical nature of which is suggested by the illustration. This shows the wide rubber band under which the tip



of the rod is inserted and which holds the rod firmly while the releaser is being raised to the detaining twig. Then the rod is withdrawn, a slight pull on the cord cutting the twig and freeing the line. [William Mills & Son, 21 Park Place, New York.]

THE STUB-PROOF TIPPED RUBBER SOLE.

A new tip has been introduced in connection with Goodyear "All Weather Tread" soles, which is called the Stub-Proof. This tip is of fiber and rubber and is made an integral part of the sole by vulcanization, so that it cannot crack off, a possibility that presented itself in the case of the old style leather-tipped rubber soles. It is also claimed for it that it will not wear away as rapidly as the leather toe, because of its resilient composition. [The Goodyear Tire & Rubber Co., Akron, Ohio.]



"Nodelay" is a new puncture repair solution. It is described as an emulsion, not a filler, and it is poured through the valve stem into the inner tube, on the entire inner surface of which it forms a thin membrane which, it is claimed, prevents leakage of air due to punctures. [Nodelay Manufacturing Co., Chicago.]

"Brevet" is a new outdoor game of more than ordinary fascination. It is played on the lawn with a ball and rubber-headed mallets, and as its enjoyment depends neither upon unusual skill nor athletic practice, a wide field is open to its introduction. [F. Regal, 529 Maroning avenue, Warren, Ohio.]

The Editor's Book Table.

TECHNICAL METHODS OF CHEMICAL ANALYSIS. VOL. III, 2 parts. Edited by George Lunge, Ph.D. English translation, edited by Charles A. Keane, D.Sc., Ph.D. D. Van Nostrand & Co., New York. [Large octavo, 1,125 pages. \$18 net for two parts.]

THIS well-known reference work is highly esteemed by analysts in every branch of chemical technology, because it represents tested results by many of the leading technologists in chemical and allied industries, consolidated by competent editors into a well-planned, systematic whole. Seventy-three collaborators are represented in the present volume.

Rubber chemists will find Volume III of special interest because it contains a section of fifty odd pages devoted to rubber and rubber goods. In the sections treating of Oils, Waxes, Resins, Textile Fibres and Inorganic Colors, they will also find much valuable information on matters intimately connected with the manufacture of rubber goods.

The contents of the volume are as follows:

Part 1—Mineral Oils, Lubricants, Fats, Waxes, Organic Preparations, India Rubber, Vegetable Tanning Materials, Leather and Inks.

Part 2—Sugar, Starch and Dextrin; Alcohol, Spirits and Liqueurs, Vinegar, Wine, Brewing Materials and Beer; Paper, Textile Fibres and Inorganic Colors.

A brief description of the nature and technology of each material precedes the detailed account and discussion of its appropriate analytic methods. In the section devoted to the consideration of the rubber industry, Messrs. Frank, Marckwald and Caspari present a clear and concise account of their subject under four general divisions, as follows:

A—The sources and chemical nature of crude rubber and its examination previous to manufacture. This is followed by detailed analytic methods for the determination of resin, moisture, ash, rubber (by tetrabromide and nitrosite methods) and protein, concluding with remarks on hot and cold vulcanization.

B—Accessory materials of the industry. A list of about sixty of the more important compounding ingredients is given and classified into organic and inorganic fillers. Regarding certain of these materials useful data are given, particularly concerning substitutes, both white and brown or black. Especial consideration is given to the chemical nature of oil substitutes, their manufacture and a scheme for their analysis is outlined.

C—The analysis of rubber goods. Under this head it is noted that the correct interpretation of a complex analysis of manufactured rubber is largely a matter of experience, since few of the analytic results correspond directly with substances originally forming part of the mixing. The reasons indicated are, first, that analysis can divide up the rubber only into chemical groups, and not into raw materials; and, second, rubber mixings of any very great simplicity rarely occur. A scheme of statement for an analysis is shown in which all percentages are calculated upon the original material.

Very full and explicit methods of analysis are detailed for every determination required, with references to original sources. This is followed by a general scheme of analysis in a series of four tables, with notes and comments on interpretation and statement of results.

The examination of cable insulation, in conformity with specifications, is treated separately. The section closes with pertinent remarks on analysis of proofed fabrics, rubber solutions, determination of specific gravities and microscopic examinations.

D—Empirical tests applied to rubber goods. These are classified and described as chemical and physical.

A list of nineteen such tests is given in detail. Several important machines of European manufacture, designed for tensile testing, are illustrated.

In closing the authors treat briefly of gutta percha and balata and give a series of tests for those materials. The work is provided with an appendix of tables for reference, drawn from the text, also with a well-arranged index of subject matter and of authors' names.

THE UTILIZATION OF WASTE PRODUCTS. By Dr. Theodor Koller. Second, revised English edition, 1915. Scott, Greenwood & Son, London; D. Van Nostrand Co., New York. [Cloth, 8vo., 336 pages, illustrated. Price, \$3.00 net, and 50 cents duty.]

The author gives brief accounts of waste recovery in many lines of manufacture, compiled from a vast bulk of technical literature.

The scope of the work is very large, covering 59 different subjects. Naturally in so ambitious an attempt the matter is rather brief and to an extent largely historical. It is impossible, also, in preparing a work of this sort, to compete with specialists in their up-to-date treatment of specific subjects. On india rubber, for example, the chapter on reclaiming adds nothing to the existing knowledge; indeed, when one considers the progress made in the last year or two, it can hardly be called up to date. A work of this sort, however, has its value in gathering together briefly much that has been done in utilizing the world's waste.

NEW TRADE PUBLICATIONS.

A NEW VOORHEES CATALOG.

The new catalog of the Voorhees Rubber Manufacturing Co., of Jersey City, New Jersey, is more than ordinarily interesting. Its 89 pages are well and generously illustrated, and the descriptions clear in showing the qualities which make Voorhees rubber goods particularly desirable in various uses. Besides rubber belting, hose and packing, which occupy chief prominence, gaskets, tubing, mats, stair treads and all the many items that go to make up a complete line of mechanical rubber goods, are given mention. This company has a special department devoted to the manufacture of candy molds, while another of its more unusual productions, and one especially interesting at this time, is the rubber shell for artillery practice. In addition to the 29 items—with 52 sub-items—contained in the index, the company is prepared to furnish estimates on any special lines, novelties or articles for unusual or peculiar requirements.

THE FIRESTONE CALENDAR FOR 1915.

The Firestone Tire & Rubber Co., of Akron, has issued its yearly calendar, which, following its usual style, commences with February and ends with January. It is in the form of a large four-page panel hanger, each page containing a calendar for three months besides a reproduction in colors of a painting by E. W. Pirson, the artist to whose work the Firestone calendars owe much of their very genuine charm. Each panel calls attention to a particular type of tire—the Firestone non-skid for pleasure vehicles, the motorcycle tire, the carriage tire and the truck tire—and each painting reproduced includes a vehicle equipped with one of these types of tires in most appropriate surroundings.

DOMINION TIRES AND TIRE ACCESSORIES.

Under this title the Canadian Consolidated Rubber Co., Limited, has published a handsome catalogue of 40 pages covering practically all rubber articles used in connection with automobiles, cycles and motorcycles. The "Nobby" and "Chain" non-skid and the "Dominion" plain tread tires are illustrated and described in detail. A weight schedule instructs car owners

as to the proper size of tire for their machines. Tire sundries are fully described and illustrated, including "Heal-a-Cut" plastic compound, reliners, self-cementing patches, rebuilding fabrics, tire tube tape, tire irons, pump valves, pressure gages and rubber bumpers. Straight side casings, of late very popular, have not been neglected by the Dominion company, which offers them in "Nobby," "Chain" and plain treads in all standard sizes, and furthermore manufactures special rim fillers to enable owners of old cars to use straight side casings.

SOME INTERESTING LETTERS FROM OUR READERS.

THINKS GERMANY IS NOT GETTING FAIR PLAY.

TO the Editor of THE INDIA RUBBER WORLD:

As a constant reader of your very valuable journal, and for many years so, I am afforded the opportunity of reading also your article on page 241 of the February number dealing with "The Rubber Trade on Guard."

Whilst acknowledging your perfect freedom to do and write whatever you like, I think I may justly trespass upon your courtesy and ask you, since you are talking of the obligation to play fair with England in the matter of rubber export, if you are of the opinion that other nations, engaged or not in the war, must take a back seat in the playhouse of American neutrality.

I think for the sake of fair play, fair play should be strictly observed in all directions and not in favor of one nation only.

This war will have an end, as all wars have had, and it would be pitiful if after the war we should have to bear in mind that fair play was on the other side of the ocean only a matter printed on paper.

Are you familiar with the fact that even now-a-days history is taught in school in England as follows: "The great war of the American Rebellion?" In Austria-Hungary and in Germany it is taught as follows: "The war of the American Independence."

What a pity that there are no men living like Franklin, Washington and the many dozens of the other great Americans.

Yours very sincerely,

Vienna, March 6, 1915.

GUSTAV HACKER.

A BRIGHTER VIEW OF DUTCH GUIANA.

TO THE EDITOR OF THE INDIA RUBBER WORLD:

In your issue of April 1 is an article by your "Regular Correspondent," headed "Trade Opportunities in Dutch Guiana," and in it there are so many statements that are not only misleading, but absolutely incorrect, that it does this colony a great injustice, and it seems to me that they should be refuted at once.

Referring to the first item, the balata industry has not ceased to be. Within the last few weeks I have known of 280 men being contracted, and sent to the bush to bleed trees. One more company now has 140 men under contract here in the city, and these will be sent to the bush at once. Nearly every day witnesses the departure of one or more parties for the bush; and while the price of this article is somewhat below the average, these large companies must see a profit ahead or they would not send these men to the bush. Every boat that leaves this port for Europe takes some of this product, it having been taken off the contraband list.

The statement that "cocoa, coffee, bananas, rubber, etc., are overflowing the local market," is absurd. Cocoa is eagerly bought here by large exporting firms, and the local price of 95c. Dutch, per K. G., is the best obtained in a good many years. Coffee is shipped on every boat to the United States, where it brings at present about 16c., American, per pound. There is no rubber to be bought here, for the reason that there is very little produced in the colony, the majority of trees not yet having

attained the required size for tapping. The outlook for well conducted plantations is bright, and has not been so good for years.

The great trouble in Suriname is that there is a large class of people here who do not care to make their living by work, and while everyone will admit that times are not just what they should be, there is plenty of work to be had here. The fact that the planters of this colony have to import thousands of indentured laborers from British India and Java, at a very high price per head, speaks for itself.

As to the new balata ordinance, it has not been in operation for a sufficient length of time to be able to comment on its faults or virtues, but the fact that it has tended to cut down the amount of advances made to laborers before entering the bush, and has at least tried to curtail the wholesale stealing of balata, has made it very unpopular with a certain class of the laboring population.

Hoping that you will give this article space in your valued journal, and hoping that it will help to correct some of the erroneous statements in the letter of your regular correspondent,

I am, very sincerely yours,

(Signed) J. S. LAWTON.

Paramaribo, April 30, 1915.

FOOTWEAR FOR THE MOUNTAINS.

A writer who contributes an article on mountain camping and its proper equipment to a recent issue of the "Saturday Evening Post" describes the proper sort of footwear for such outings, as follows:

"A very useful form of footwear for almost any sort of wilderness travel is the leather-topped, rubber-footed shoe, with a corrugated sole. You can get them with heels, also, if you like. Until worn smooth they hold very well on the rocks. It is always more or less damp round camp—even in the mountains—from dew or the like. If you have on a couple of pairs of heavy stockings and these waterproof boots or moccasins, you can hunt in rain or snow, and be comfortable in the evening or in the morning dew, when you go out to hunt the horses—which naturally always are lost."

It is very evident from the above description that the writer had in mind and had also had in use a pair of the famous Barker Hunting Shoes.

A NEW CANADIAN RUBBER COMPANY.

The F. E. Partridge Rubber Co. has been formed in Montreal, to manufacture rubber sundries and specialties for the wholesale drug trade, automobile tires and tire accessories of all kinds. F. E. Partridge, who on March 1 resigned from the vice-presidency of the Canadian Consolidated Rubber Co., Limited, with which he had been associated for the past ten years, is the head of the new concern, which has established offices at 146 Iberville street, Montreal. Previous to his connection with the Canadian Consolidated company, Mr. Partridge was for ten years actively interested in rubber manufacture in the United States, where he was associated with some of the largest concerns engaged in that line.

The firm of Congdon, Marsh, Limited, of Winnipeg, Manitoba, is opening a branch warehouse at Edmonton, Alberta, for the distribution of its shoe product and of Miner rubbers, made by the Miner Rubber Co., Limited, of Granby, Quebec. The Congdon, Marsh concern is sole distributor of Miner rubbers in western Canada.

The Chicago branch of the New York Belting & Packing Co. on May 1 moved from its old quarters at 130 West Lake street to a new store at 124-126 West Lake street.

The Obituary Record.

JOHN D. VERMEULE.

WHEN John D. Vermeule, for thirty-two years president of Goodyear's India Rubber Glove Manufacturing Co., passed away, May 18, a career without parallel in length of active association with the rubber trade came to a close. He was connected with rubber manufacture for 72 years, actively so with the exception of the last four or five years, and holding during the whole of that time a position of the first importance.

Mr. Vermeule was born in Plainfield, New Jersey, September 22, 1822. He came from the best stock of Holland, the first of his ancestors to come to America being Adrian Vermeule, who took up his abode in Harlem in 1699. He was town clerk and also officiated as lecturer in the Dutch Reformed Church. One of his sons and four of his grandsons fought in the war of the revolution, and one of these grandsons was the grandfather of John D. Vermeule; from which it will be perceived that he came logically by those sturdy Dutch traits of industry, honesty and self-reliance, which were such conspicuous traits in his character.

He remained at school until he was 18 and then embarked on a commercial career as clerk in a New Brunswick store. Four years later, in 1844, Goodyear's India Rubber Glove Manufacturing Co. was organized, and Mr. Vermeule, then but 22, joined the new rubber company. He occupied an important position from the start and in time became the company's largest stockholder. In 1877 he was elected its treasurer, and in 1882 its president, an office which he held continuously until last August, when he relinquished it to younger hands. He continued, however, as a director in that company, and also as a director in Goodyear's Metallic Rubber Shoe Co., and retained his place in the directorate of the United States Rubber Co., a member of whose board he had been since the formation of that corporation in 1893.

It is hardly necessary to refer to the great success of the Glove company under Mr. Vermeule's long management. It achieved, many years ago, a reputation of which any company might well be proud. This was due not only to Mr. Vermeule's executive ability and personal standing, but to the fine judgment with which he selected his assistants; among them, for instance, being the late Clinton Van Vliet, so many years his selling agent, and F. F. Schaffer, long his factory superintendent and now president of the company.

Mr. Vermeule had many large interests outside of rubber. He was for some years president of the Holland Trust Co., vice-president of the American Savings & Loan Association and director in the Chatham and Phoenix National Banks. The enterprise, however, in which he was most deeply interested outside of rubber manufacture was the York Cliffs Improvement Co., which acquired a valuable tract of land at York Cliffs, Maine.

Mr. Vermeule was president of this company, and it was chiefly due to his energy that the property was developed into a popular summer resort. In addition to building a fine hotel he erected a summer residence for himself which was one of the most attractive spots along the Maine coast.

He was one of the patrons of the Metropolitan Museum of Art in New York and had a personal collection of particularly fine paintings, and also a notable library. He married, in 1846, Miss Mary C. Kelley, daughter of a prominent Philadelphia merchant. She died some years ago, and during the last years of his life he lived with a niece in Staten Island. This niece, Mrs. J. B. Austin, and her brother, Edward Vermeule, of Plainfield, New Jersey, are his nearest surviving relatives.



JOHN D. VERMEULE.

JOHN P. RIDER.

To have been actively and prominently associated with an important and successful industrial corporation continuously for 52 years is an unusual record, but this distinction belongs to John P. Rider, formerly president of the New York Rubber Co., who passed away, in his 81st year, at his home in Beacon, New York, May 15.

Mr. Rider was born at Rhinebeck—only a few miles away from Beacon and in the same county—January 28, 1835. He graduated from the local schools, and at the age of 16 was hard at work in a store belonging to an uncle in a neighboring town. Two years later he returned to Rhinebeck to assist his father, who had just been appointed postmaster in that village. It shows what a long period this active life covered when the fact is recalled that this postal appointment was made by President Pierce. After distributing letters for his neighbors for a couple of years he went, at the age of 20, down to the city of New York, which opened up a larger field of possibilities than his native village afforded. Here he became connected with a wholesale house, and some eight years later, in 1863, left that to accept a position with the New York Rubber Co., an association he was destined to continue for over half a century.

In the following year he was made secretary of the company, and filled that position until 1883, when he was elected vice-president. That position he filled for 23 years, when, on the death of the company's president, in 1906, he was made the chief executive of the corporation, remaining its president until 1911, when, because of advancing years and a desire to lighten his business burden, he resigned. The company, however, was not disposed to lose his services altogether, and he was made chairman of the board of trustees.

As throwing some light on the opinion entertained of him by



JOHN P. RIDER.

the people with whom he had been associated so many years, resolutions passed by the board of directors at the time of his resignation are interesting. These resolutions, after a suitable preamble, continue: "It is unanimously resolved that this board looks back with great pride and satisfaction to this long period of faithful service to the company by Mr. Rider, that the prosperity of the company during this long period has been largely due to the ability, fidelity and zest of Mr. Rider in its behalf." The resolutions go on to give expression to the regret the directors felt in his resignation, which was tempered, however, by the satisfaction of knowing that, as chairman of the trustees, he would continue to give the company the benefit of his experience and advice.

The rubber industry, while it dominated his activities, did not absolutely engross them, for he devoted considerable time to banking, in the town of Beacon, which during the last 35 years of his life had been his home. He was one of the organizers, in 1893, of the Matteawan National Bank and was its vice-president from that time until 1909, when he became president, retaining that position until last January, when, being in his 81st year, he felt that he ought not to be asked longer to discharge the duties of the office.

He was prominent in the civic life of the community in which he lived and was several times elected supervisor of the town. On the day of his death the local daily devoted two columns to the story of his life and had much to say regarding his services to the community for the third of a century during which he had made it his home. He was also exceedingly prominent in Masonic circles, having attained to the 32nd degree and being a member not only of the local lodge but of various Masonic lodges in New York City.

The surviving members of his family consist of a sister, two grandchildren and two great-grandchildren.

WILLIAM R. THROPP.

William R. Thropp, president of William R. Thropp & Sons' Co., died May 26 at his home in Trenton, New Jersey, from a complication of diseases, at the age of 58 years.

He was born in Trenton, receiving his education in the schools of that city. In 1879, at the age of 22, having completed a four-year course in machinery and engineering, he became associated with his father, the late John E. Thropp, in the manufacture of rubber mill machinery. He was made superintendent of the plant, a position which he occupied for ten years. In January, 1890, he discontinued this association and engaged independently in a similar line of manufacture, erecting a factory building on East State street, Trenton, which formed the nucleus of the present extensive plant of the William R. Thropp & Sons' Co., one of the most prominent and widely known concerns engaged in this important line of manufacture.

Mr. Thropp was a member of the Masonic order, being affiliated with Trenton Lodge, the Three-Times Three Chapter, Palestine Commandry and Crescent Temple of the Mystic Shrine.

He is survived by his wife, a daughter and two sons—John E. and Joseph W.—who were associated with him in business.

MAJOR ELIOT C. PIERCE.

So many years have elapsed since Major Eliot C. Pierce, who died at his home in Weymouth, Massachusetts, May 21, was active in the rubber industry that many men in the trade may not recall his connection with it, but as a matter of fact Major Pierce was one of the pioneers in the rubber reclaiming industry. He, with his brother, J. C. Pierce, formed the Pierce Rubber Co., shortly after the Civil War and at one time had a very sizable plant at Danversport, Massachusetts. The company, however, went out of business about twenty years ago, and after that time Major Pierce had no further association with this industry.

Major Pierce was born in Braintree, Massachusetts, February

14, 1831. He served with great distinction in the Civil War, taking part in every battle fought by the Army of the Potomac with the exception of Antietam. He did not engage in that as he was out on a furlough because of wounds received at Bull Run. For gallant service he was promoted to a captaincy and later made a major, and it was believed that during his last years he was the only surviving officer of the regiment to which he belonged.

MARSHALL CUSHING.

Marshall Cushing, who died at the Post-Graduate Hospital in New York, May 12, as a result of an operation for appendicitis, was never directly connected with the rubber trade, but as he was for some years secretary of the National Association of Manufacturers, he was well known to many manufacturers of rubber products who were members of that association.

Mr. Cushing was born in Hingham, Massachusetts, in 1860, and graduated from Harvard College in 1883. He had a notable newspaper experience, first as editorial writer on the "Boston Globe," and later as founder of the "Washington Times," and editor of the "New York Press." In the meantime he had acted as private secretary to Senator Lodge, and also to John Wanamaker, when he was postmaster-general. Later Mr. Cushing became secretary of the National Association of Manufacturers, and continued up to the time of his death as editor and publisher of "How," a magazine published in the general interest of manufacturers.

HEINRICH BRÜCK.

Heinrich Brück, who for many years was general manager of the Leipsic Rubber Works, Leipsic, Germany, passed away, April 22. He was 73 years old and had been connected with this company since 1864, when it was known as Julius Marx, Heine & Co. He began as domestic and foreign traveling salesman, and was soon taken into partnership. He was always especially active in the export department of the Leipsic Rubber Works, and this he made the company's most important department. He became general director in 1913. In the death of Mr. Brück the German rubber industry loses one of its oldest and most distinguished members, and the founder of the surgical branch of that industry.

RUBBER MEN ON THE "LUSITANIA."

Among the passengers on the ill-fated "Lusitania," which was torpedoed by the Germans, May 7, there were three men connected with the rubber trade, namely: Arthur H. Adams, of London; Arthur R. Foley, of Trenton; William H. Brown, of Buffalo.

ARTHUR H. ADAMS.

Arthur H. Adams, one of the victims of the "Lusitania" disaster, was on his way from a visit to his parents in Newton, Massachusetts, to London, which had been his home for some years and where he represented the interests of the United States Rubber Co. He was about 40 years of age and a graduate of the Massachusetts Institute of Technology. He first went abroad as an electrical engineer, but later became identified with American rubber interests. He succeeded in escaping, with his nineteen-year-old son, from the ship, and was in a lifeboat when it was struck by one of the "Lusitania's" masts. The boy was saved, but the father was knocked from the boat into the water and perished.

ARTHUR R. FOLEY.

Another victim of the sinking of the "Lusitania" was Arthur R. Foley, of the Home Rubber Co., of Trenton, New Jersey. Mr. Foley joined the selling department of that company in 1891. At first he confined his attention to the New York City trade, but proving to be a successful salesman, his territory was gradually enlarged until his travels carried him all over the United States, and during the last few years he had given quite a little time to the company's foreign business, particularly its

interests in England. Before the voyage which terminated so tragically, he had four times visited the company's London office, and he was widely known in the rubber trade on both sides of the water.

WILLIAM H. BROWN.

Mr. Brown was engaged in the rubber and mill supply business in Buffalo, New York, and lived at 689 West Delaware avenue in that city. He was on his way to England on a trip undertaken partly for business and partly for pleasure.

David C. Lockwood, superintendent of the Rubber & Celluloid Harness Trimming Co., of Newark, New Jersey, died at his home in that city on April 22. He was 74 years of age and had been in the employ of the Rubber & Celluloid company for more than 30 years. He was prominent in local political circles and a member of various organizations. Five daughters and a son survive him.

FIVE MEN INDICTED FOR FRAUDULENT RUBBER SHIPMENTS.

IN the March number of this publication mention was made of the discovery of an attempt on February 15 to ship rubber to the other side concealed in bales of cotton waste. The name of the shipper as it appeared on the manifest was A. B. Newman, of New York.

As may be imagined, no one was more interested in ascertaining all the facts in the case than the members of the Rubber Club, and particularly the members of the Control Committee, which had undertaken to see that the guarantee given the British Government in consideration of the lifting of the embargo was scrupulously lived up to. The committee began immediate investigations and soon discovered that the cotton bales containing the hidden rubber had come from 470 Pulaski street, Brooklyn, where a building had been recently rented by a man who represented himself as a rubber manufacturer from the West, and had assumed the name of an officer in a well-known concern in Indiana. He bought small lots of rubber in different quarters under the same disguise. These facts and many others gleaned by the committee's investigators were promptly laid before the Federal authorities.

The government has been working on this matter quietly ever since, with the result that on May 27 the Federal Grand Jury presented to Judge Pollock in the Federal Court in New York an indictment against five men for conspiracy to defraud the government through false manifests.

The defendants were Harry R. Salomon and Albert Salomon, of the firm of Salomon Brothers & Co., importers and exporters, of 299 Broadway; Albert B. Newman, importer and commission merchant of 99 Nassau street; Franz Rosenberg, of the Oestreicher-Amerikano Rubber Co., and Sigmund Karman, a rubber expert of the Excelsior Works at Budapest.

According to the assistant district attorney having the matter in charge, the method pursued was as follows: Harry Salomon, a member of the firm of Salomon Bros. & Co., who have been in business in this country for a number of years, was not an American citizen. Being in Germany at the time the war broke out, he was called to the colors as a reservist, with the rank of lieutenant. As there was a scarcity of cotton, he suggested to his superior officers the idea of coming to the United States to devise a method of getting cotton to Germany. While at work on this project he met, in Hanover, Rosenberg and Karman, who had been commissioned to sail for America to arrange, if possible, for shipment of rubber to Austria by way of Italy, Karman being a rubber expert. Rosenberg, who was equipped with a letter of credit for \$100,000 from a Vienna bank, together with Kar-

man, arrived in New York in December, Harry Salomon having arrived a little earlier. Here they were joined in the enterprise by Albert S. Salomon, the other member of Salomon Bros. A. B. Newman was working in a tailoring establishment on small wages, but being a nephew of Karman he was added to the group and set up as an export and commission merchant, with offices at 99 Nassau street.

The next step was to rent a place in Greenpoint, Brooklyn. They then bought a quantity of rubber and barrels of resin. They put the rubber in the barrels and completely surrounded it, top, bottom and all around, by a thick layer of resin, melted and poured in. They made up 276 barrels in this way, with a total weight of 142,870 pounds. These were shipped to their agent in Genoa by the Cunard liner "Carpathia," which sailed from New York on January 5, Newman filling out the manifest and swearing that the shipment contained nothing but resin. But before this resin-coated rubber reached its destination the United States government had got knowledge of the matter and had the shipment held in Naples, and in the meantime resin had been put on the list of contraband, which compelled the operators to find some other means of concealing their rubber. Their next attempt at shipping rubber was in the middle of bales of cotton waste—as described in the March number of this publication. Before doing this they had experiments made by an X-ray specialist, until they believed their cotton bales were X-ray proof.

But the government had also discovered that this plan was on foot, and consequently when 178 bales of apparent cotton waste were delivered at the White Star dock for shipment by the "Cretic" for Genoa they were immediately subjected to X-ray investigation. Several bales were passed, when the operator detected a certain cloudy effect. The bale was opened and the rubber discovered, and then the whole consignment was investigated.

It is believed that the rubber concealed in the barrels of resin and the bales of cotton amounted all told to about 50 tons, valued at about \$80,000.

The attorneys for the defendants, immediately after the indictment, gave out the following statement:

"Franz Rosenberg, a merchant of Hanover, Germany, came to this country for the purpose of purchasing rubber for certain rubber concerns in Austria. Sigmund Karman, of the rubber concerns, accompanied him for the purpose of passing on the quality of the rubber. Newman was employed by them to do odds and ends.

"In shipping the rubber in the manner they did they did so for the purpose of circumventing the enemy and had not in view a violation of any statute. They did not know that there was a statute on the books which compelled them to give a proper description in the manifest of the shipment. If they failed to comply with the law in giving an improper description in the manifest, they were entirely ignorant of such violation."

The following statement was made in behalf of the Salomon brothers, Albert and Harry:

"We have learned with great surprise and sorrow of the action of the Grand Jury. We are informed that we have been indicted for violating a highly technical statute, which, however, involves no imputation whatever of any moral wrongdoing, but merely a technical charge growing out of the present complicated international conditions. We feel ourselves entirely blameless in the matter and are not conscious of having committed any wrong whatever."

SHIPMENT OF RUBBER TO RUSSIA STOPPED.

An attempt to ship rubber by the steamship "Atlantic" to Archangel, Russia, in violation of the agreement made with the British Government, was frustrated ten days ago by the activities of the Rubber Control Committee. Upon investigation it was found that the consignment consisted of 423 cases and 100 bags of rubber. The entire cargo was later unloaded at Bush Terminal docks and the steamship "Atlantic" did not sail for Archangel as scheduled.

News of the American Rubber Trade.

THE FISK COMPANY ACQUIRES LARGE PLOT.

THE Fisk Rubber Co. has acquired what was formerly known as the Griggs property, at the corner of Oak and Grove streets, Chicopee Falls, Massachusetts. The plot consists of about $8\frac{1}{4}$ acres and has approximately 450 feet frontage on Oak street, 435 feet on Grove street and on the west 2,000 feet of railroad frontage. The railroad divides this property from the present plant.

Because the land originally owned by the Fisk company is now completely occupied by the recently enlarged plant, the expansion of business has made necessary the acquisition of this property. Plans have been drawn for the erection of a modern office building at the corner of Oak and Grove streets upon which work will be started at once. A warehouse and manufacturing buildings will eventually be built on the remaining land. The present offices will be used for rest rooms, restaurants, laboratory and hospital rooms.

The increased space available will make it possible for the company to provide for the welfare of its employes to a greater extent than has heretofore been possible because of lack of room, due to the rapid development of the business. The additions planned will make the Fisk Rubber Co. one of the largest institutions in New England, and its plant will be modern and well equipped in every particular.

FIVE RUBBER CONCERNS COMBINE.

The five Boston branch stores of the United States Rubber Co., namely, the Banigan Rubber Co., the Enterprise Rubber Co., the Hubmark Rubber Co., the New England Rubber Shoe Co., and the Tremont Rubber Co., are to be brought together under one roof and combined into one company known as the United States Rubber Co. of New England. These five branch stores, which have hitherto been at different places, will after the first of July all be located at 280-284 Summer street, where floor space amounting to 100,000 square feet has been secured, which will be adequate for the proper display of the various brands.

The managers of the various branch stores will still remain in charge of their different brands. C. L. Weaver will continue manager of the Banigan branch; Chester Pike, Jr., will remain manager of the Hubmark branch; Edward B. Swett will look after the American goods as heretofore, and H. C. Kalish will manage the Wales-Goodyear branch, while William H. Porter, now of the Enterprise Rubber Co., will be general manager.

The retail department of the Enterprise company will be discontinued.

The Boston office of the United States Rubber Co.—Charles A. Coe eastern selling agent—will remain as it has been for years, at 140 Essex street. The American Rubber Co.'s clothing department, in charge of N. Lincoln Greene, will also continue as at present, at that location. Alterations are now in progress to accommodate the Revere Rubber Co.'s Boston office and salesroom—J. H. Learned manager—which will be moved to 140 Essex street from its present Devonshire street location, on the 17th of this month. The Revere Rubber Co. manufactures the "Spring Step" rubber heel, also a general line of mechanical goods.

GOVERNMENT SUPPLIES WANTED.

Bids will be opened June 8 on 2,800 feet of air hose. Bidders interested should apply either to the Paymaster General U. S. N. at Washington, or to the nearest Navy Pay Office, for schedule No. 8301. On the same date bids will be opened on 8,500 feet of single strand rubber covered wire—schedule 8345—and on 51,000 feet of single conductor wire and interior communication cable—schedules 8345 and 8347.

Schedule 8338 calls for garden and suction hose, bids on which will be accepted until June 15.

DIVIDEND PAID TO WALPOLE CREDITORS.

The creditors' committee of the Walpole Tire & Rubber Co., of Walpole, Massachusetts, made distribution May 24 of a dividend amounting to 25 per cent. of the face value of claims. At the same time a circular letter was sent out to depositing creditors referring to the sale of certain assets to and the continuance of the business of the Walpole and subsidiary companies by the Revere Rubber Co., of Chelsea, Massachusetts. Part of the purchase price has been paid by the Revere company, the balance to be paid as soon as necessary papers can be passed, inventory taken, etc. This circular letter also advises that another substantial dividend may reasonably be expected within thirty days.

That the stockholders of the Walpole Tire & Rubber Co. are not satisfied with the arrangements resulting in the purchase of this property by the creditors' committee, and the subsequent disposal of a portion of its assets—merchandise, machinery, contracts, etc.—is evidenced by the fact that a meeting was held at Boston on May 10 at which 4,300 shares of preferred stock were represented and at which a committee was appointed to investigate all of the affairs in connection with the company since its receivership and prior thereto and to report back to the stockholders.

A TEST OF DREADNAUGHT TIRES.

A novel tire test is being made by the Dreadnaught Tire & Rubber Co., of Baltimore. A Lancia car equipped with Dreadnaught tires recently started from New York for a trip to San Francisco; and as this company guarantees its tires for 7,500 miles' service, it expects the round trip to be completed on the original casings. Messrs. LaPorte and Goss, who are making the trip, are insured comfort along the route, for the interior of the car has been arranged on the Pullman idea, with berths suspended from the roof and with racks for carrying the lighter baggage. The long tail-board of the car can also be dropped outward, and a single curtain arrangement insures warmth and protection and obviates the necessity of a tent. The tires were inspected and marked by a committee at the commencement of the trip and will be re-examined at its end.

RUBBER COMPANY DIVIDENDS.

The American Chiclé Co., of New York, on May 20 paid a quarterly dividend of $1\frac{1}{2}$ per cent. on its common stock to stockholders of record on May 15.

The Apsley Rubber Co., of Hudson, Massachusetts, has declared a semi-annual dividend of $3\frac{1}{2}$ per cent. on its preferred stock, payable July 1 to stockholders of record on June 22.

The B. F. Goodrich Co., of Akron, Ohio, has declared a quarterly dividend of $1\frac{1}{4}$ per cent. on its preferred stock, payable July 1 to stockholders of record on June 18.

The Converse Rubber Shoe Co., of Malden, Massachusetts, has declared a regular semi-annual dividend of $3\frac{1}{2}$ per cent., payable June 1 to stockholders of record on May 24.

CONVERSE RUBBER SHOE CO. INCREASES CAPITAL STOCK.

At the annual meeting of the Converse Rubber Shoe Co., of Malden, Massachusetts, held May 5, the old board of directors was re-elected, as well as the former officers of the company, who are: President, M. M. Converse; secretary, H. L. Dolliff; treasurer, Hugh Bullock; assistant superintendent, H. C. Arnold. At a previous meeting of the stockholders, late in March, authorization was given for an increase in capital stock from \$600,000 to \$700,000, and the greater part of this issue—placed by Adams & Co., of Boston—according to late information, has already been sold.

CLIFFORD H. OAKLEY.

RAILROADING is a very good apprenticeship for any sort of active life, especially when the railroading consists of actual road construction. This means habits of hard work, attention to detail and a life in the open. All this fell to the lot of Clifford H. Oakley, between the ages of 17 and 22. It might



CLIFFORD H. OAKLEY.

be mentioned in passing that Mr. Oakley was born in October, 1869, in Cleveland. At 16 he had started to work. At 17 he entered the employ of the Erie railroad as a drafting-room apprentice in the motive power department. Soon he was transferred to the maintenance of way department, as rodman, and later became an assistant engineer of the road. Mr. Oakley looks back with pleasure and satisfaction to his strenuous experiences in

the open during

those 5 years of exacting but interesting railroad work.

In 1891 Mr. Oakley entered the service of the Cleveland Rubber Co. and within a year had become assistant superintendent of that plant. When that company was consolidated with the New York Belting & Packing Co. and others to form the Mechanical Rubber Co., he was sent to Passaic, New Jersey, as superintendent of the plant of the New York Belting & Packing Co. at that place. Two years later he returned to Cleveland to become superintendent of the Cleveland Rubber Works, which position he held for 5 years. He then associated himself with the Grieb Rubber Co. at Trenton, New Jersey, as factory manager, and helped to shape the destinies of this concern for seven years, during which time he induced the Ajax Rubber Co. of New York to move to Trenton and consolidate with the Grieb company, thus forming the well-known Ajax-Grieb Rubber Co.

In 1907 Mr. Oakley decided to enter upon the manufacture of rubber goods on his own account. He founded the Essex Rubber Co., whose business, starting in a small way, has grown to its present proportions under his leadership as president and general manager. This company makes a varied line of mechanical specialties, a hard molded insulating material known as "Essex Condensite," automobile accessories, asbestos brake lining, packings, sporting goods, horseshoe pads and numerous other specialties. The company is credited with a very large production of rubber soles, and the reputation thus gained has contributed largely to its success in placing on the market the Essex rubber heel. It enjoys sales of close to a million dollars a year and has recently completed extensive additions to its plant in Trenton.

Mr. Oakley is vice-president of the Trenton Chamber of Commerce and chairman of its Manufacturing Committee, trustee and director of the New Jersey Manufacturers' Association and an active member of the American Society of Mechanical Engineers.

The accepted authority on South American rubber—"The Rubber Country of the Amazon," by Henry C. Pearson.

THE MARRIAGE OF MR. APSLEY.

Ex-Congressman L. D. Apsley, president of the Apsley Rubber Co., and Mrs. Abigail Black were married at Mr. Apsley's residence in Hudson, Massachusetts, on the evening of April 30. The ceremony was performed by the Reverend Newton Black, rector of Christ Episcopal Church, of Needham, Massachusetts, a brother-in-law of the bride.

MR. CUTLER CONTINUES HIS SCIENTIFIC RESEARCH WORK.

H. H. Cutler, vice-president of the Cutler-Hammer Clutch Co., which manufactures rubber mill devices, has moved his residence from Milwaukee, Wisconsin, where the home offices are located, to Boston—his intention being to engage in scientific research in the Massachusetts Institute of Technology, of which he is a graduate. Mr. Cutler, to whom is credited more patents on electric controlling devices than have been granted to any other person in the United States, retired several years ago from active management of the Cutler-Hammer Clutch and Manufacturing companies, both of which he founded.

PERSONAL MENTION.

Mr. Robert B. Baird, of the Rubber Trading Co., is on his way to the Pacific coast, his itinerary embracing Los Angeles, Pasadena, San Diego and the San Francisco Fair.

Word has been received that Captain Hanson, the Montreal manager of the Dunlop Tire & Rubber Goods Co., Limited, and formerly connected with the Canadian Consolidated Rubber Co., Limited, who went to the front with the Canadian troops some months ago, has been wounded in battle.

Mr. and Mrs. Wilmer Dunbar—the former vice-president and general manager of the Dreadnaught Tire & Rubber Co., of Baltimore, and of the Greensburg Tire & Rubber Co., of Greensburg, Pennsylvania—on May 14 celebrated the twenty-fifth anniversary of their marriage with a dinner to their friends at the Greensburg Country Club.

H. T. Dunn, president of the Fisk Rubber Co., of Chicopee Falls, Massachusetts, has acquired an interest in the Willys-Overland automobile manufacturing company and will in the future devote a portion of his time to the interests of that company, being its vice-president and a member of its board of directors. The Willys-Overland plant is located at Toledo, Ohio.

C. W. Wacker has been promoted from the management of The B. F. Goodrich Co.'s branch at Toledo to a similar position at Cleveland, Ohio, being succeeded in the former city by H. W. L. Kidder.

The Republic Rubber Co., of Youngstown, Ohio, is being represented in Utah by Rudolph Orlob, with offices in the Walker Bank building, Salt Lake City.

W. O. Durrell, formerly connected with the Diamond Rubber Co., has been appointed Boston branch manager for the Pennsylvania Rubber Co., of Jeannette, Pennsylvania, succeeding Graham Laurie, who will devote his attention hereafter to an accessory concern in which he has purchased an interest.

J. S. Watterson, formerly manager of the Iroquois Rubber Co., of Buffalo, New York, has become president of that concern, an office made vacant by the resignation of Edward T. Smith to assume the presidency of the Chicago Rubber Co., of Chicago, Illinois.

James Pfeiffer, president of the Miller Rubber Co., of Akron, arrived in New York from Bermuda, May 19, on the "Bermudian" of the Quebec line.

R. E. Smith, formerly Providence branch manager for the United States Tire Co., has been appointed manager of the branch at Worcester, Massachusetts, succeeding John R. Whitmyer.

C. F. McPHILLIPS & CO. OPEN CRUDE RUBBER OFFICE.

A new firm, of which C. F. McPhillips is president, and known as C. F. McPhillips & Co., Inc., has been established at 97 Water street, New York, to deal in crude rubber. Mr. McPhillips has had long experience in the rubber trade, in proving qualities, grading and making selections of the various rubber stocks. He was connected for eight years with Earle Brothers, until his resignation on April 1 to establish this new enterprise, and for two years previous with Wallace L. Gough.

AJAX-GRIEB WINS INFRINGEMENT SUIT.

The Ajax-Grieb Rubber Co., of Trenton, New Jersey, has successfully defended the suit brought against it by the Goodyear Tire & Rubber Co., of Akron, Ohio, for infringement of patent on a collapsible tire core, decision having been rendered in favor of the former company. The patent on which infringement was claimed was one issued in 1907 to Will. C. State and assigned by him to the Goodyear company, but evidence, in the form of drawings and testimony, brought out the fact that collapsible cores, built by The John E. Thropp's Sons Co., had been in use by the defendant company as early as 1903.

THE AKRON TIRE CO. MANUFACTURING IN LONG ISLAND CITY.

The Akron Tire Co., Inc., formed in 1911 with a capital stock of \$5,000 to manufacture rubber goods, has increased its capitalization to \$300,000, and has gone into the manufacture of rubber tires in a \$165,000 factory at Long Island City, New York, completed early in 1914, and which has a capacity of about 200 tires per day. These tires are made under the brand "Akron," and are distributed under a guarantee of 3,500 miles' service. The company's main offices and distributing headquarters are at 1612 Broadway, New York.

NEW WATERPROOFING PROCESS.

A new method of waterproofing textiles is based on the impregnation of their constituent parts. The weft threads are wound and placed in autoclaves filled with a rubber solution. Pressure is applied to obtain perfect impregnation. Weaving is done while the solution is still in a liquid form on the threads. The working of the loom forces out the liquid, which is distributed over the warp threads by friction. With proper density of the solution and the proper division of the fabric into warp and weft, complete impregnation can be obtained, the finished fabric being perfectly waterproof without preventing the circulation of air.

Woolen fabrics so treated can be dressed and finished in the ordinary manner. This method applied to tire fabrics is said to increase their resistance to friction.

RUBBER IN A REAL LIFE ROMANCE.

An interesting story has appeared in the daily press in which Frederick A. Chubb, president of the United States and Central American Timber, Rubber & Realty Co., is the central figure. It relates how Mr. Chubb, while living in Washington in 1900 with his wife and one child, was suddenly called to arms, being sent to China, where, in an encounter at Peking he was severely wounded and for several months confined to a hospital. A telegram to his wife—to whom in the meantime a second child had been born—that he had been shot, naturally led her to believe him dead, so that on his return to the United States he learned that she had remarried and left Washington with her children. After several months spent in a fruitless search for his family, he secured work in the Panama Canal zone, where he invested his savings in rubber and timber lands, until finally he owned 100,000 acres. On a business trip to the United States recently he learned through relatives of his wife's death at Hagerstown, Maryland, and on a visit to that town he discovered his two children, the older of whom, a daughter, was working in a factory. He has taken his two children with him to his Southern home.

TRADE NEWS NOTES.

The Hood Rubber Co. is building a warehouse on its property at Watertown, Massachusetts. This new building will contain 79,000 square feet of floor space, being 176 feet long, 112 feet wide and 4 stories high.

The Boston Woven Hose & Rubber Co., of Boston, announces the addition to its selling force of Louis O. Duclos, former sales manager for the Walpole Tire & Rubber Co., of Walpole, Massachusetts. Mr. Duclos, who has a wide acquaintance in the trade and a thorough knowledge of the market, will act as special representative, handling friction and insulating tapes and splicing compounds.

The National India Rubber Co., of Bristol, Rhode Island, and the Safety Insulated Wire & Cable Co., of New York, have been awarded contracts to furnish cable of different grades for use in the underground construction of the police and fire alarm installations at Niagara Falls, New York.

The International Association of rubber stamp makers will hold its 1915 annual convention at the Multnomah Hotel, Portland, Oregon, July 14-16. Special railroad rates have been obtained for eastern members who may wish to attend, and plans prepared for interesting sightseeing trips.

The Southern Rubber & Supply Co. has secured the agency for Goodrich tires in Atlanta, Georgia, and has opened a store in that city at 84 North Pryor street.

The Globe Tire Co., of Trenton, New Jersey, has made arrangements with the Hartford Garage Co., of Hartford, Connecticut, for the distribution of its tires in that city and state.

The Airplex Inner Tire Co., of Springfield, Missouri, incorporated in June, 1914, with a capital stock of \$3,000, to deal in and manufacture articles of rubber and rubber substitutes, has increased its capitalization to \$20,000.

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, has opened a branch at Columbia, South Carolina, in charge of J. P. Leavitt, where a large stock of tires and accessories will be carried for distribution throughout that state and surrounding territory.

One of the conspicuous features of the recent Chicago Prosperity Parade was the section occupied by the Firestone Tire & Rubber Co. This company had a large touring car, a truck and seven small service cars in the line, elaborately decorated and particularly calling attention to Firestone tire service, to prove the superiority of which the track victories in which these tires have figured were well emphasized.

A process has been invented for the electrical treatment of cloth by which it is rendered impervious to water while being permeable by air, and which is expected to prove of value in the manufacture of dirigible balloons, the addition of weight due to this treatment being very slight, or less than 1 per cent.

The John A. Roebling's Sons Co. of New York, a branch of the John A. Roebling's Sons Co., of Trenton, which manufactures rubber insulated and other wires, has become a member of the Merchants' Association of New York.

M. I. Goldberg, formerly secretary and treasurer of the Manchester Rubber Co., a concern formed in 1912 to manufacture rubber clothing, with headquarters at 79 Hope street, Brooklyn, New York, announces that he has severed his connection with that company.

Fifty years' continuous employment with one concern is a distinction of sufficient rarity to command attention, and as a rule reflects favorably on the conditions surrounding such employment. On April 16 Miss Rose A. Gray completed fifty years of employment in the rubber factory of Eberhard Faber at Newark, New Jersey, which she entered when 15 years of age. The occasion was marked by the presentation of a purse of gold, floral tributes and other appreciative demonstrations.

WITH THE GOODYEAR RUBBER COMPANY FIFTY YEARS.

There are not many men in the rubber trade, or as a matter of fact in any trade, who have the satisfaction of rounding out a full 50 years of association with one company, but this is the distinction that has been achieved by James Suydam, treasurer and general manager of the Goodyear Rubber Co., of St. Paul.

It was in 1865 that Mr. Suydam first entered the employ of the Goodyear company in New York City, then known as the Rubber Clothing Co. He began as a bookkeeper but was soon promoted to the selling department. He was given the western territory, making his headquarters in Chicago. He was the first rubber salesman to visit the Twin Cities—St. Paul and Minneapolis—going there in 1867, when the combined population of the two places was only 50,000. In 1875 he was made manager of the Milwaukee branch, remaining there 10 years. He went to St. Paul in 1885 and opened northwestern branches for the company in that city and in Minneapolis. During the last 2 years he has also had charge of the Milwaukee branch.

Mr. Suydam says that he is 73 years old, but this statement rests purely on his own word as there are no physical proofs to substantiate it. He looks like a man of 60 and is as full of energy and business capacity as most men of 50.



JAMES SUYDAM.

PERSONAL MENTION.

Albert Waterhouse, president of The Waterhouse Co., Limited, Honolulu, and secretary of the Pahang Rubber Co., Limited, and also of the Tandjong Olok Rubber Co., Limited, of the Malay Peninsula, made a recent call at the office of THE INDIA RUBBER WORLD, together with M. A. Cheek, the manager of the Waterhouse interests on the east coast of the Malay Peninsula. Messrs. Waterhouse and Cheek are on their way from the East to the company's headquarters in Honolulu.

Arthur E. Friswell, who formerly was associated with a number of tire companies, including the Mechanical Fabric Co., The Hartford Rubber Works Co. and the Goodyear Tire & Rubber Co., in the capacity of tire superintendent, but who has been spending the last few years in Bermuda, has returned to the United States and expects to engage again in tire manufacture.

Dr. J. W. Rabe, physician of The B. F. Goodrich Co., as well as chief of the city hospital staff, of Akron, Ohio, visited New York, May 22, as representative of the company at a conference of physicians of 25 of the big factories of the United States. This is the first conference of its kind ever held here, its purpose being the exchange of information and suggestion on factory medical work.

Otis R. Cook, sales manager of the Kelly-Springfield Tire Co., of Akron, has been elected a director of that company.

The Boston Woven Hose & Rubber Co. is represented in Missouri by J. W. Culver, with offices at Tenth and Olive streets,

St. Louis, in the Syndicate Trust building. Mr. Culver is described by a local newspaper man as one "who knows how to specialize, systematize and concentrate business methods."

J. W. Davidson, whose death occurred on April 11, had been employed for the past ten years in the Montreal office of the Canadian Consolidated Rubber Co., Limited, as an artist and designer, the thousands of molds used by that company being largely the result of his work.

MR. HERMESSEN ON HIS WAY TO JOIN THE ENGLISH ARMY.

A recent visitor to New York, and also to the office of THE INDIA RUBBER WORLD, was J. L. Hermessen, F. R. G. S. Mr. Hermessen, who is a civil engineer, left England fourteen years ago for this side of the water. He spent about a year in the States and then went to Mexico, where he became very much interested in the development of rubber plantations, although his work properly had to do with railroad construction in that republic. He was intimately acquainted with the late J. C. Harvey and spent some time on his plantation at La Buena Ventura and became deeply interested in Mr. Harvey's experiments both in *Castilloa* and later in *Hevea*. When Mexican conditions became such that no Anglo-Saxon could remain there with comfort or safety, Mr. Hermessen went to Ecuador, where during the last year and a half he has been engaged in railroad surveys. It was his intention to go from there into the rubber country of the Amazon, but the outbreak of hostilities changed his plans and decided him to return to England. He sailed from New York on the "Adriatic" May 27 and intends on reaching England to offer his services as an engineer to the military authorities.

TRADE NEWS NOTES.

The New Jersey Zinc Co., from its offices at 55 Wall street, New York, gives out a statement to the effect that it has no intention of operating a rubber tire plant in connection with its factories at Palmerton and Millport as has been reported in the daily press.

On page 404 of our April issue mention was made of the purchase by The Midvale Steel & Iron Co. of equipment for a reclaiming mill to be established near Youngstown, Ohio. This was incorrect, the purchase referred to having been made by The New Castle Steel & Iron Co., of New Castle, Pennsylvania.

The Michelin Tire Co., of Milltown, New Jersey, through its central representative, R. B. Tracy, at Chicago, has established an agency with Brant Brothers, of Indianapolis, for the sale of its product in that section. F. J. Potter has been placed in charge of the company's new branch in Des Moines, Iowa.

As a result of tests recently made, the official league baseball made by The Draper-Maynard Co., of Plymouth, New Hampshire, has been adopted for use in the public schools of New York City during the 1915 season. The rubber center and the thread were both included in these tests and the ball was used for some time in actual play.

Work has been started on a three-story factory addition to the plant of the St. Mungo Manufacturing Co. of America, at Newark, New Jersey. This building, which will be devoted to the manufacture of golf balls, will occupy a space 50 x 75 feet and will cost in the neighborhood of \$15,000.

The 200-mile Southwest Sweepstake automobile race at Oklahoma City on April 29 was won by "Bob" Burman, who drove a French Peugeot car, fitted with Nassau tires, made by the Thermoid Rubber Co., of Trenton, New Jersey. His average speed was 67.98 miles per hour.

In a late Babson report on business conditions, issued for distribution to manufacturers and jobbers, Akron is described as a city which stands out from the rest and one which should not be overlooked by salesmen. The report says that Akron rubber mills "are paying unusually low prices for their crude rubber and hence, with good orders on their books, are in an exceedingly favorable position."

TRADE NEWS NOTES.

The firm of Johnstone, Whitworth & Co., which imports and deals in crude rubber, on May 1 changed its name to J. T. Johnstone & Co., and its address from 130-132 Pearl street to 22 William street, New York.

Fred. Stern & Co., crude rubber brokers, with offices in London and Liverpool, announce the opening of a New York branch in the South Ferry building, 44 Whitehall street.

The explosion of a vulcanizing machine did considerable damage recently to the building, stock equipment of the Todd Rubber Co., which conducts a service and supply station at Norwich, Connecticut. The failure of the safety steam pressure valve to work is given as the presumable cause of the explosion.

The L. E. Bowers Co., of 326 North Broad street, Philadelphia, has been appointed exclusive selling agent in that city for the Miller tire, made by the Miller Rubber Co., of Akron, Ohio.

At the 18th annual meeting of the American Society for Testing Materials, to be held at the Hotel Traymore, Atlantic City, New Jersey, June 22-26, committee D-9, of which C. E. Skinner is chairman, will report on Standard Tests of Insulating Materials.

The Converse Rubber Shoe Co., of Malden, Massachusetts, has brought suit in the Superior Civil Court at East Cambridge against the Boston & Maine Railroad for \$300,000 fire damage which it alleges resulted from a spark dropped from one of the railroad company's locomotives.

An order recently received by the Republic Rubber Co., of Youngstown, Ohio, for solid rubber tires for export, was duplicated a few days later—with the result that this department will be more than usually busy for some months to come. The garden hose department is also reported to be fully occupied, the output for April being 300 per cent. greater than that of any previous month.

This company has opened a factory sales branch, under the management of Glen P. Thayer, at 44 North Division street, Grand Rapids, Michigan, to serve the trade of western Michigan.

The Mansfield Tire & Rubber Co. will shortly begin the erection of a four-story and basement addition to its plant at Mansfield, Ohio—this new structure to be 100 x 41 feet.

Work is being rushed on the plant of the Marathon Tire & Rubber Co. at Cuyahoga Falls, Ohio, which it is hoped to have ready for occupancy by the middle of July. The building when completed will be 300 x 196 feet, four stories high, with basement, and will cost in the neighborhood of \$100,000. It is being erected in three sections, two of which are well under way.

The Biggs Boiler Works Co., of Akron, Ohio, which manufactures vulcanizers, devulcanizers, tire repair equipment, etc., is increasing its capacity by the erection of a one-story brick factory addition 30 x 150 feet.

The Gordon Rubber Co., of Canton, Ohio, has just completed a factory addition 28 x 110 feet, and has two small buildings now in course of construction, to be used for tire and sundries departments.

The East Palestine Rubber Co., of East Palestine, Ohio, is putting an additional story on its factory, which will enable the company to triple its present capacity in tires and tubes. H. L. Larsen, formerly with the Boston Woven Hose & Rubber Co., of Cambridge, Massachusetts, and more recently with the Federal Rubber Manufacturing Co., of Milwaukee, Wisconsin, is the superintendent.

The Adamson Machine Co., Akron, Ohio, has added a new building, 80x160 feet, in which it has commenced the manufacture of converted steel castings of very high grade, ranging from 1 to 5,000 pounds, for making steel molds. A new administration building, which will house the offices and drafting departments, is also under construction.

THE NAVY DEPARTMENT AWARDS BALLOON CONTRACT.

Contract was awarded to the Connecticut Air Craft Co., of New Haven, Connecticut, May 14, by Secretary Daniels, for a dirigible balloon for the United States Navy, on a bid of \$45,636.25. Of the four bids submitted, the Connecticut company was the only one accompanied by complete data and specifications. The contract calls for delivery within four months. This dirigible is designed to carry 8 men. It is to be 175 feet long and 55 feet high, and will have a gas capacity of 110,000 cubic feet. The construction of the gas bag will require thousands of yards of rubber coated silk. The last naval appropriation bill carried a specific appropriation of \$1,000,000 for aeronautics.

TRADE OPPORTUNITIES FROM CONSULAR REPORTS.

A Russian business man requests the names of American firms desiring to purchase old rubber. Report No. 16,689.

A manufacturer of photographic materials in France wishes to be put in touch with manufacturers of sponge rubber, to conform to samples which may be examined at the Bureau and its branch offices. Report No. 16,768.

THE MOHAWK RUBBER CO. ESTABLISHES AGENCIES.

The Mohawk Rubber Co., of Akron, Ohio, which manufactures tires and tubes under the trade name "Quality," has recently given distributing agencies to the following concerns: Scanlon Auto Tire & Supply Co., Rochester, New York; Utica Cycle Co., Utica, New York; W. J. Holliday Co., Indianapolis, Indiana; Erie Supply Co., Toledo, Ohio, and The Southern Motors Co., Louisville, Kentucky.

GOODYEAR TIRE & RUBBER CO. CLOSING ITS NEW YORK RETAIL STORE.

The Goodyear Tire & Rubber Co., of Akron, Ohio, has discontinued its retail department in New York City and will distribute its product in that section hereafter through its service station and truck tire department at 207 West Fiftieth street, and its mechanical goods branch at 30 Church street, both of which are in charge of P. E. Smith, branch manager, under the general supervision of J. W. Hobbs, New York district manager. The district office and warehouse are located at 588 Jackson avenue, Long Island City.

RUBBER COMPANY TO LOCATE AT KEOKUK.

The Standard Four Tire Co. has been organized, along co-operative lines, to manufacture automobile tires, specializing in four standard sizes, 30 x 3, 30 x 3½, 32 x 3½ and 34 x 4 inch. Offices have been established at Keokuk, Iowa, where the erection of a factory is to be started not later than July 15, arrangements having been effected with the local industrial association by which a three-acre site has been secured for this purpose. It is also required that \$20,000 worth of 8 per cent. preferred stock be subscribed locally, work to start when total subscriptions reach \$49,000. The company's capitalization is \$200,000, and its officers are: President, J. R. Beaver; treasurer, F. M. Sweetser; secretary, A. L. Higbee—all of Marion, Indiana. The enterprise has been promoted by I. V. Maclean, of Toledo, Ohio. The plans provide for the erection of a one-story brick and steel building, not less than 200 x 60 feet, to be completed by October 15, and the employment of 40 operatives at the start.

As a protection against the gases employed in the bombs with which Germany is now waging warfare, the German soldiers are provided with rubber respirators, such as are commonly used by chemical workers in the factories of that country. These respirators are snout-shaped and a moistened plug neutralizes the effects of the gas, while a valve at the side provides for exhalations. In other instances their outfits have included a small bag containing a pad to be placed over the mouth when charging over gas-swept areas.

NEW INCORPORATIONS.

American Rubber Corporation, April 21, 1915; under the laws of Delaware; authorized capital, \$300,000. Incorporators: H. H. Waller, 78 Essex street; Henry C. Botty, Jr., 140 Nassau street—both in New York City—and M. Friedberg, 1460 Union street, Brooklyn, New York. Principal office, with the Capital Trust Co., Dover, Delaware. To manufacture, buy, sell, import, export and otherwise deal in rubber and all articles made wholly or partly of rubber.

Athletic Rubber Bag Corporation, May 13, 1915; under the laws of New York; authorized capital, \$5,000. Incorporators: Pauline Scolnick and Israel Scolnick—both of 121 Canal street—and Morris Hochstein, 19 Henry street—all in New York City. To manufacture rubber and leather bags, etc.

Bona Vida Co., Inc., May 19, 1915; under the laws of New York; authorized capital, \$10,000. Incorporators: Joseph D. Jennings, Rutherford, New Jersey; Miriam Weinberg 232 Howard street, and Louis H. Harris, 445 West One Hundred and Twelfth street—both in New York City. To manufacture sanitary rubber goods.

Ceylon Tire Co., April 14, 1915; under the laws of Ohio; authorized capital, \$10,000. Incorporators: H. W. Holcombe, E. R. Purviance, C. C. Stoffer, O. A. Cherry, and William F. Kelley. To buy, sell and deal in automobile tires and automobile accessories.

Cleveland-Ford Tire Co., April 23, 1915; under the laws of Ohio; authorized capital, \$10,000. Incorporators: R. E. Elvidge, E. R. Cook, C. G. Roads, M. A. McManus, and L. B. Bacon. To manufacture buy, sell and deal in automobile tires and tubes.

Cornfield Resilient Wheel Co., April 3, 1915; under the laws of New York; authorized capital, \$400,000. Incorporators: Stanislaw Verusio, William H. Byrne—both of 25 Broad street—and Noah Cornfield, Hotel Apthorp, Ninety-fourth street and Broadway—all in New York City. To manufacture tires and wheels, etc.

Covey Trading Corporation, May 6, 1915; under the laws of New York; authorized capital, \$25,000. Incorporators: A. G. Levy, Scarsdale, New York; Allan F. Cohn, 683 Fifth avenue, New York City, and Daniel G. Griffin, 129 Pierrepont street, Brooklyn, New York. Commission dealers in textiles, metal, rubber, etc.

Double Tread Tire Co., April 27, 1915; under the laws of Illinois; authorized capital, \$4,000. Incorporators: Albert C. Unban, Charles H. Wood and B. W. Schumacher. Principal office, 1438 South Michigan avenue, Chicago. To manufacture, repair and rebuild automobile tires, and buy, sell, exchange and deal in automobile tires, etc.

Eagle Waterproof Co., Inc., The, April 23, 1915; under the laws of New York; authorized capital, \$10,000. Incorporators: Sophia Rosken, 295 South Second street; Simon Harris, 87 New Grand street, and William Salinger, 1726 Union street—all in Brooklyn, New York. To manufacture rubber clothing, etc.

Kirk Tire & Supply Co., The A. W., April 13, 1915; under the laws of Ohio; authorized capital, \$10,000. Incorporators: A. W. Kirk, John E. Parsons, Jr., W. O. Guiss, H. W. Fraser, and J. B. Clark. To manufacture, buy, sell and deal in automobile tires, supplies, etc.

Kohl Manufacturing Co., April 20, 1915; under the laws of Massachusetts; authorized capital, \$10,000. Incorporators: Fred E. Sanders, 125 Marlboro street; Frank H. Cole, 37 Webster avenue; Clinton E. Somes and Ralph B. Currier, both of 12 Bloomingdale street—all in Chelsea, Massachusetts. To deal in and manufacture all kinds of asbestos and rubber goods, or merchandise of which asbestos or rubber is a part.

McPhillips & Co., Inc., C. F., April 29, 1915; under the laws of New York; authorized capital, \$10,000. Incorporators: Cornelius F. McPhillips, West Orange; Alexander H. Barklie,

167 Newkirk street, Jersey City—both in New Jersey—and Fred E. Henning, 10 Wall street, New York. Commission dealers in crude rubber.

Midgley Tires Co., The, March 31, 1915; under the laws of Ohio; authorized capital, \$5,000. Incorporators: Thomas Midgley, Thomas Midgley, Jr., Henry Plow, Charles S. M. Krumm, and Panel J. Cull. To buy, sell and deal in tires and other automobile accessories.

Milwaukee Auto Tire Exchange, March 24, 1915; under the laws of Wisconsin; authorized capital, \$10,000. Incorporators: S. E. Schroeder (president), 461 Milwaukee street, and W. N. Durbin (secretary and treasurer), 3328 cedar street—both in Milwaukee, Wisconsin. Principal office, Milwaukee. To deal in auto tires.

Mystery Tire Co. of Canada, Limited, March 4, 1915; under the laws of Canada; authorized capital, \$400,000, divided into 4,000 shares of \$100 each. Principal place of business, Montreal, Canada. To manufacture automobiles, cycles, airships, carriages and conveyances of all kinds and articles used in the construction thereof or articles made of wood, iron, rubber, etc. Incorporators: Henry and Elmer Farmer, Elie Laumière, Berthe Dufort, and Jeanne Marsan—all of Montreal.

Obalski & Sweeney, Inc., May 17, 1915; under the laws of New York; authorized capital, \$100,000. Incorporators: Xavier W. Obalski and Edward C. Sweeney, Jr.—both of 59 Pearl street—and Wendell P. McKown, 50 Church street—all in New York City. To deal in rubber and rubber products.

Pneumatic Spring Equipment Co., Inc., May 7, 1915; under the laws of New York; authorized capital, \$50,000. Incorporators: John L. Wehrmann, 450 East One Hundred and Seventy-sixth street; Clinton J. Beasley, 1750 Anthony avenue—both in New York City—and Henry Seibel, 333 Thirtieth street, West New York, New Jersey. To manufacture pneumatic springs, tubes, tires, auto. parts, etc.

Polack Tyre & Rubber Co. of New Jersey, April 21, 1915; under the laws of New Jersey; authorized capital, \$5,000. Incorporators: Hugo Hoffstaedter and John F. Crowley—both of 246 West Fifty-ninth street, New York City—and Edward Weber, 51 Stanton street, Newark, New Jersey. Principal office, 51 Stanton street, Newark. To manufacture, sell and deal in tires, rims, automobiles etc.

Qualityre Rubber Co. March 1, 1915; under the laws of Maine; authorized capital, \$100,000. Clement Studebaker, Jr. (president), South Bend, Indiana, and Scott Brown (secretary), Lytton Building, Chicago. To engage in a general mercantile and rubber business.

South West Qualityre Co., May 3, 1915; under the laws of Maine; authorized capital, \$100,000. Incorporators: A. B. Farnham, Clarence G. Trott, J. P. O'Donnell, J. R. Griffin, and Charles W. Hamilton—all of Portland, Maine. To deal in rubber and rubber goods.

Tayson Rubber Co., The, April 27, 1915; under the laws of Rhode Island; authorized capital, \$200,000—\$100,000 common and \$100,000 preferred. Incorporators: Alfred G. Chaffee, John A. Tillinghast—both of Providence—and Teresa E. Muller, Cranston—all in Rhode Island.

Tilt Shoe Co., J. E., April 29, 1915; under the laws of Illinois; authorized capital, \$500,000. Incorporators: J. E. Tilt, Otto S. Schmidt, David Tilt, F. R. Lamb and S. A. Corlett. Principal office, 512-522 West Huron street, Chicago, Illinois. To manufacture and deal in shoes and rubbers.

According to a late consular report, there is a good market in India for rubber combs, large quantities of which in the past have been supplied by Austrian and German firms. The native women are said to use the same type of comb as that in use by Europeans and Americans, while the Parsi women often use a number of combs for decorating and ornamenting their hair.

TRADE NEWS NOTES.

The Turner, Vaughn & Taylor Co., of Cuyahoga Falls, Ohio, has just turned out a large number of 150-ton presses for solid tire work.

The Firestone Tire & Rubber Co., of Akron, Ohio, is adding a second story to the building at Wood and Broad streets, Philadelphia, which is being occupied by its branch in that city as a solid tire shop.

The Xenia Rubber Manufacturing Co., of Xenia, Ohio, has increased its manufacturing facilities as well as its lines of production by the purchase of the entire assets of the Springfield Tire & Rubber Co. and the Springfield Elastic Tread Co., both of Springfield, Ohio. The equipment included in this purchase is to be moved into a new factory at Xenia.

The People's Rubber Co. has decided upon the removal of its plant from Akron to Barberton, Ohio, where it will occupy the old factory of the Summit Rubber Co., employing at the start about 100 men.

The Victor Rubber Co., of Springfield, Ohio, which recently completed an addition to its plant, is soon to commence work on another building, 30 x 108 feet. A mileage capacity test is now being made of the new pneumatic tire made by this concern. An automobile has been equipped with a set of these tires and will be run 300 miles a day while they last.

The Gordon Rubber Co., of Canton, Ohio, is considering the increase of its capital stock from \$300,000 to \$600,000, the proceeds of the new issue being intended to provide funds for needed additions.

The Lavelle Rubber Co., which deals extensively in hose, packing, mechanical rubber goods and mill supplies throughout the Middle West, with headquarters at Chicago, has moved from 231 North Fifth avenue, where it has been so long located, to 181 West Lake street.

The McNaul Auto Tire Co., of Toledo, Ohio, is represented in New England by branches at Hartford, Connecticut and Providence, Rhode Island, in charge, respectively, of A. A. Tuttle and James C. O'Donnald.

At a recent meeting of stockholders of the Kelly-Springfield Tire Co., held at Jersey City, a resolution was passed authorizing the establishment of a fund—to the amount of 10 per cent. of the yearly net profits in excess of \$1,000,000—to be distributed among officers and employees of the company, according to a plan not yet decided upon.

An involuntary petition in bankruptcy was filed May 3 against the Mercury Rubber Co., of Brooklyn, New York. This company, composed of Samuel and Morris Honeyman, George Broches and Michael Mislig, was engaged in the rubberizing of cloth, at 147 Forty-first street, Brooklyn.

The Motor Tire Re-Construction Co., incorporated in March, as mentioned on page 439 of our May issue, has moved its New York office to 52 Vanderbilt avenue, and secured temporary manufacturing accommodations at Mt. Vernon, New York.

A company has been formed in Brooklyn, New York, to carry on a general tire sale and repair business, known as the Double-Life Tire Co., Inc. This company claims a process on which patent is pending for converting two worn tires into one "strong, durable shoe." Prices are quoted when customer furnishes both casings or only one.

The National Rubber Manufacturing Co., of Long Island City, New York, has leased a factory at Harrison, New Jersey, to be operated as a rubber plant, with rubber horseshoe pads as a specialty.

The San Francisco branch of the United States Rubber Co. is reported to have recently brought about the arrest of Russell K. Smith, a dealer in automobile accessories, who, before the grand jury, confessed to having influenced Harry L. Rogers, also of San Francisco, to steal automobile tires to the value of \$19,000 from the United States company, where he was em-

ployed. The system was a simple one, orders placed by Swift for a pair of tires being filled with probably five or six tires and billed at the price ordered.

The Savage Tire Co., of San Diego, California, has received authorization from the State Corporation Department to issue and sell bonds to the amount of \$500,000. These bonds, which are to run from ten to twenty years, are to be marketed at a price that will net the company 90 per cent. of face value. The proceeds are understood to be intended for the payment of outstanding obligations on the present plant and equipment, for the construction of additions and the development of patents and business.

The sales conversion of the Goodyear Tire & Rubber Co. will be held this year at San Francisco instead of at the Akron factory.

The United States Tire Co. has established a distributing branch at Erie, Pennsylvania, with store and warerooms at 29 West Eleventh street, from which salesmen will be sent out over the surrounding territory.

The secret of the noiseless street car, the invention of which has recently been announced, is a perfected type of running gear, duplex wheels, one revolving within the other and separated by thick bands of rubber, supporting the trucks.

WHERE RUBBER-ITE HOSE AND BELTING ARE MADE.

Here is a photographic view, in condensed form, of the factory where "Rubber-ite" cotton hose and "Rubber-ite" belting are made. It is the plant of the McIlroy Belting & Hose Co., Hammond, Indiana, which was founded by F. B. McIlroy.

Mr. McIlroy has had over thirty years' experience in the manufacture of fire hose, and he naturally has confidence in his ability as a hose maker. He believes that his Rubber-ite cotton rubber-lined fire hose cannot be surpassed. It is made of carefully selected cotton yarn and the lining is the highest grade Para rubber, but its distinguishing feature lies in the fact that the cotton is impregnated with a compound made from elaterite, which is a hydrocarbon sometimes called Mineral Rubber and which is reduced to a fluid form by a special process invented by the McIlroy company. Because of this elaterite impregnation the company feels warranted in stating that the hose is permanently pre-



PLANT OF THE MCILROY BELTING & HOSE CO.

served from mildew and decay, that it will not absorb water and thus become heavy and burdensome, that it is protected from chafing and that it is impervious to oils, which therefore cannot penetrate the cotton and destroy the rubber.

The same claims are made for the company's belting, which is folded and sewed in the same manner as all stitched canvas belting, but in which the cotton is thoroughly impregnated with elaterite, which acts as a filler and has the same preserving effect as described above in the hose.

Rubber-ite hose and belting have been on the market for ten years and have been highly praised by a great many people who have given them the most thorough test in actual use.

THE RUBBER TRADE IN BOSTON.

By Our Regular Correspondent.

BUSINESS in the rubber industry is unevenly divided. In spite of the fact that this is a pretty good year for automobiling, taking the number of machines in actual use, there are tire people who complain of slow business, while others report running well up to capacity. No doubt the number of manufacturers now making tires must result in the splitting up of the business, but it is a very noticeable feature that those doing extensive advertising report better business than some of the lesser known producers.

The makers of first class clothing report that the manufacturers of cheap lines cut into their business on the lower priced goods, but that in the finer lines business is good. Up to now the expected difficulty of securing foreign textiles has not materialized to any great extent, while some American cloths are being made which fully equal the imported article. In mechanicals at least one leading factory has a sufficient demand to run night shifts to get out its orders. Drug sundries are in nominal, seasonable demand. Boot and shoe orders are coming in steadily and factories running well up to normal output, either on orders or in anticipation of later business. Tennis shoes are having an extraordinary call, and the manufacturers are vying with each other to bring out more stylish lines.

Crude rubber dealers and brokers report a very slowly yet noticeably increasing demand. Consumers have been, and still are, buying in smaller quantities than in previous years, but, as was said before, business is improving somewhat in this particular. Reclaimers are not specially happy just now. Scrap rubber is high and reclaimed rubber selling at much lower prices than formerly. There are no foreign galoshes coming here. Russia and Germany are holding all for domestic reclaiming. This makes scrap shoes high, while old tires, which yield much greater proportion of reclaimed gum, and usually are higher than shoes, are now quoted at much lower prices.

The Boston Woven Hose & Rubber Co. was the host, and 90 members of the Boston chamber of commerce were the guests at an interesting function which took place Thursday, May 6. There was recently inaugurated by the chamber a series of "Industrial Excursions," visits to manufacturing plants in the vicinity of Boston, and this was the ninth of the series.

The members were conducted in special cars to the factory at Cambridge, where they were welcomed by Vice-President George E. Hall and Treasurer Henry B. Sprague. Mr. Hall made a brief address and then the party was split up into eleven groups, each of which, in charge of a guide, was conducted through the various departments of the plant.

The trip began at the basement, where the visitors were shown the bins of crude rubber, then conducted through the mill-room, where the processes of washing, mixing and calendering were explained; thence through various other departments, where the visitors saw the many processes for manufacturing tubing, jar rings, heels and soles, belting, hose, etc. Special admiration was shown regarding the exhibit of hose weaving machines, and the manufacture of hose of all sizes from half-inch garden hose to great suction and fire hose; while the production of belting called for similar expressions of interest.

From the rubber departments to the brass foundry and finishing shop the groups were conducted, and here they were shown the manufacture of nozzles, couplings, sprinklers and similar articles.

As souvenirs of the occasion, each visitor received a package of fruit-jar rings, a box of tire tape and a book of preserving recipes. One of the officials of the chamber of commerce characterized the excursion as one of the most instructive and interesting of the trips the chamber has taken this season, and,

practically without exception, the various members of the party manifested unusual interest and expressed great surprise at the extent to which the plant of this company has grown.

It is reported that the Boston Woven Hose & Rubber Co. handled the largest business in its history during the last three months, and that all the departments except those where women are employed have been running night shifts to keep abreast of their orders. This is mostly domestic business, though the effects of the war have been noted by orders being received from parties in South America and Africa which would have gone to England under pacific circumstances.

The Apsley Rubber Co., of Hudson, Massachusetts, in celebrating the thirtieth anniversary of its foundation, has issued a handsome catalog of the clothing and footwear which it manufactures. The picture of its first factory, started in 1885—a two-story, rented building—is strongly contrasted with the great industrial plant of today, with its big brick buildings, its complement of machinery, propelled by electric power brought from the Connecticut river, many miles away; its rows of houses for the work people, special railroad side tracks and all the appurtenances of a great manufacturing plant. Hon. L. D. Apsley may well be proud of the industry he has founded and the success it has achieved. A short "Foreword," written by Mr. Apsley, states that "Neither in sharp business contest for supremacy in the rubber business, nor in panics, nor war times have they failed to meet their paper at maturity. They have never passed a dividend, paying regularly 7 per cent. on preferred stock, and from 4 to 40 per cent. on common stock.

"Its thirtieth anniversary finds the company in the most prosperous condition in its history, having done in the first quarter of this year the largest business it has ever done, being 20 per cent. more than during the first 3 months of last year, while the first month of the second quarter of this year shows an increase of 30 per cent. over last year."

Costello C. Converse and his wife have notified the First Baptist Church in Malden that they will furnish for the rebuilt church a fine organ with all the latest attachments. The church, which was very largely the beneficiary of Deacon E. S. Converse, of the Boston Rubber Shoe Co. during his life, was destroyed by fire early in the spring, and this action of his daughter and nephew is particularly graceful and generous.

William Noll, advertising director of the Foster Rubber Co., which makes the "Catspaw" rubber heel, is in San Francisco, taking charge of the company's exhibit at the Panama-Pacific Exposition. Mr. Noll never lets an exhibition get by without springing something new either in the way of a souvenir or an exhibit. He always manages to attend the annual convention of the National Shoe Finders' Association, which this year will be held early in June, at San Francisco. The Foster rubber heel is always well advertised at these conventions either by a souvenir presented to each member present, or a special entertainment which forms a feature of the program.

Another rubber heel man from this city who has always taken a prominent part in these conventions is Frank W. Whitcher, head of the house which manufactures the Velvet rubber heel. Mr. Whitcher is also a contributor to the pleasure of the visitors, though perhaps in a less conspicuous way. He is the most active exponent of the movement to limit selling prices of specialties, believing that trade is ruined by cut price competition. Mr. Whitcher is the originator of the movement for "more business men in Congress." He will undoubtedly be heard from at the California convention.

Charles A. Coe, the Eastern selling agent of the United States Rubber Co., who returned in April from a strenuous business trip, and who was stricken with pneumonia soon after, has almost completely recovered and will probably be at his place of business, for a portion of the time at least, by the time this letter is published.

W. M. Gunlock, under whose direction the Spring Step rubber heel has attained so great a publicity, was in Boston the last week of May, making his headquarters at the office of the Revere Rubber Co., which manufactures this heel.

Francis H. Appleton is a delegate to the Shriners' convention to be held in San Francisco next month. He will leave here July 5 for a quite extended trip, a special train being provided for the members of the Mystic Shrine. Several stops will be made at various cities and points of interest, the excursion lasting a number of weeks.

S. P. Sharples, the well-known rubber chemist, is enjoying a period of rest in Florida. There are few younger old men in the industry than Mr. Sharples, and not many better known. Despite his 73 years, he is regularly in attendance at the outings of the Rubber Club of America, Inc., and a participant in some of the amusements there provided.

And, speaking of these outings, many members of the club will be grieved to hear that Elmer Chickering, the "official" photographer of these occasions, whose pictures have graced the pages of THE INDIA RUBBER WORLD, died last month at the comparatively young age of 53 years. No photographer in New England had a larger acquaintance among celebrities than he, and few more friends.

THE RUBBER TRADE IN RHODE ISLAND.

By Our Regular Correspondent.

THE rubber goods produced at the various factories throughout Rhode Island continue to be in active demand, and every concern is working its plant on full time, or better. Perhaps the greatest handicap experienced is the lack of competent help to meet the increasing demand. There have been unusually large shipments of tennis shoes from two of the plants, and apparently the demand has not abated yet, although the output since the first of the year has been phenomenal.

Receiver Curtis of the defunct Atlantic National Bank of Providence, who, in that capacity, was the principal creditor of the Walpole Tire & Rubber Co., at Walpole Massachusetts, made the announcement a few days ago that the Revere Rubber Co., which operates an extensive plant on Valley and Eagle streets, had purchased part of the machinery of the plant at Walpole and would operate the plant there temporarily and possibly eventually purchase the entire plant. He also stated that Robert C. Fisher had been employed by the Revere company as its manager at Walpole. He was made treasurer of the old Walpole company by Mr. Curtis, and later receiver.

"The old stockholders," according to a statement made by Mr. Curtis, "will suffer a total loss on their holdings of Walpole stock and both classes of that concern's stock are now worthless. Thousands of dollars of both preferred and common stock of that company were held here. This stock was put up as collateral for a number of loans made by the Atlantic National Bank. The stockholders' reorganization, of which Michael J. Houlihan, of this city, vice-president of the Walpole company, is a member, in a letter sent out the latter

part of April, practically withdrew from all further negotiations and gave notice of the return of the deposit money."

About 350 people are now employed at the factory of the Narragansett Rubber Co. on Wood street, Bristol, and 35,000 pairs of shoes are being turned out each week. Mr. McCarthy, the manager, however, has announced that there is need of experienced sewing machine operators and shoe makers at the factory.

The Tayson Rubber Co. has been incorporated, under the laws of Rhode Island, by Alfred G. Chaffee, John A. Tillingshast and Teresa E. Mullen, the capital of the new concern being fixed at \$100,000.

The International Rubber Co., of West Barrington, is enjoying a considerable increase in the volume of its business, which has necessitated numerous changes and additions in order to give adequate facilities. One of the most important additions has been the building of a new vulcanizer on the west side of the factory.

THE RUBBER TRADE IN TRENTON.

By Our Regular Correspondent.

ARTHUR R. FOLEY, of the traveling staff of the Home Rubber Co., went to his death when the liner "Lusitania" was sunk, on May 7, by a German submarine. He was bound for the London office of the company, on his fifth voyage in the interests of his employers. Mr. Foley's name did not appear among the first lists of the dead, and his many friends were buoyed with hope until official confirmation of his death was wired the Home company by Secretary of State Bryan. The body has been brought home for burial, arriving in New York May 24 on board the "New York" of the American line. Further mention of Mr. Foley will be found among the obituary notices in this issue.

The death of Elbert Hubbard, who was a victim at the same time of German submarine activities, was also a matter of particular regret among those in the trade who met him when he visited Trenton shortly before sailing. Mr. Hubbard inspected the plant of the Empire Rubber & Tire Co. and had promised to write his impressions in a booklet which he expected to issue at an early day.

The plant of the Brookville Rubber Co. in West Trenton is being dismantled, preparatory to removal of the equipment to the Panther Rubber Co.'s plant at Stoughton, Massachusetts, in the interests of economy. The Trenton plant, under the direction of R. W. Lane, has been used by the Panther company for reclaiming rubber by means of electricity, a process perfected by Mr. Lane. The system in use does away with the acid process and devulcanizing, as ordinarily understood. The Panther company acquired the old Plymouth plant at Stoughton some time ago and has since carried on its manufacturing there. An addition to accommodate the reclaiming department has just been completed adjoining the Stoughton plant. About twenty employes will be affected by the removal.

An order for 500,000 gross of jar rings is among the business recently booked by the Acme Rubber Manufacturing Co. Augustine W. Waldron is a new member of the Acme traveling staff.

The Paramount Rubber Co., which started business here about two years ago, has already built up an enviable reputation in the manufacture of tennis and rubber hand balls. The product of this concern has been so much in demand since the first of the

year that it has been necessary to run both day and night shifts of workers. The Paramount company is owned by R. H. Rosenfeld, of Cleveland, Ohio, and Fred T. Roberts and H. R. Strauss, of Trenton.

The Ajax-Grieb Rubber Co. is making preparations for the erection of a small one-story addition, 28 x 88 feet, to its factory, for which work bids have recently been asked.

This company, through its president, Horace A. DeLisser, has generously offered to provide lunch for the 5,000 New York children who are expected to participate in the annual outing to be given by the Orphans' Automobile Day Association, June 3, if a sufficient number of automobiles can be secured.

Harry Freedman, a dealer in scrap rubber, was fined \$500 and costs by Judge Marshall in Mercer Court, on complaint of the Ajax-Grieb company, for the alleged theft of goods. It was charged that Freedman paid Joseph Varney, an employe of the company, to load on his truck more bundles of scrap rubber than he had actually purchased.

The scrap rubber dealers have been giving the factories considerable trouble of late. Some of the dealers have even gone so far as to patch up tires bought as scrap and to dispose of them as products of the companies which had stamped their names upon them. To meet this situation the factories have adopted a plan of mutilating defective tires so that it is impossible to "assemble" the parts.

Trenton promoters have leased a building at Spotswood, New Jersey, where they propose to manufacture a line of drug sundries. Dr. J. G. Denelsbeck is at the head of the movement.

Robert L. Logan, formerly Trenton representative for the National Cash Register Co., has been appointed manager of the Pittsburgh office of the Empire Rubber & Tire Co.

The Universal Tire & Tube Market has been established at 249 North Broad street, this city, to "reclaim" tires by the process of stitching together two worn casings, one over the other, a method of utilization of old tires which since the war is said to have become quite common in Europe.

A handsomely engraved cup, presented by the Vulcanized Rubber Co., to be contested for in the Delaware River Baseball League, has been on exhibition in the window of a Trenton sporting goods store. It has attracted much attention.

John L. Brock, a leading auto dealer, in a recent Trenton address, took the position that the manufacturers of automobile tires are not trying to sell as many tires as possible to a few people, but are trying to sell as few tires as possible to many people. In other words, it is to the interest of the manufacturer to have his product give long service, as this will eventually mean most to him.

THE RUBBER TRADE IN AKRON.

By Our Regular Correspondent.

PAUL E. WERNER, for many years identified with the printing and publishing industry, is preparing to enter the rubber trade. He is now working on plans for the organization of a \$1,000,000 rubber company for the manufacture of tires and other rubber goods. Although the location of the new plant has not been decided upon, it is reported that it will be located in a Kansas city.

It is understood that the financing has been practically completed, and that the company will be incorporated soon. Mr. Werner is more than 65 years of age, and for about forty years was at the head of one of the world's largest printing and publishing concerns. He retired from the New Werner Co., now the Superior Printing Co., about two years ago.

Work was started May 11 on the new six-story factory building to be added to the plant of The B. F. Goodrich Co., when workmen commenced to dismantle the old offices and barns of the Brewster Coal Co. on South Main street. This building when completed—which will probably be during the present summer—will be used in part as a warehouse and also for a boot and shoe manufacturing department. It will cost, with equipment, in the neighborhood of \$1,000,000.

About 100 representatives of the mechanical sales department of the Goodrich company, from all parts of the country, visited the home offices during the week of May 10 for conference and instruction.

A special meeting of stockholders of the Goodyear Tire & Rubber Co. has been called for June 1 to consider a proposal of the directors for a \$10,000,000 increase in capital stock. It is explained, unofficially, that the extent of the company's business is disproportionate to the capitalization, amounting last year to \$33,000,000 on a capitalization of \$15,000,000; and it is expected that this record will be exceeded in 1915. The plan of the directors, which will probably be ratified at the stockholders' meeting, is to increase the present preferred stock capitalization from \$7,000,000 to \$8,000,000, and the common from \$8,000,000 to \$17,000,000, to be issued as needed to make provision for future growth and to reimburse shareholders for earnings devoted to capital purposes. It is also proposed to set aside a portion of this new issue for distribution among employees, it having been the policy of the company previous to the entire distribution of its last common stock issue to allow the purchase by certain employees of common shares on a five-year easy payment plan, permitting accumulated dividends to apply on the purchase price.

F. A. Seiberling, president of the Goodyear company, represented the University of Akron at the World Court congress at Cleveland, Ohio, May 12-14, held in the interest of international peace.

Officials of Akron rubber companies decline to discuss, as being "too silly," newspaper reports of the past month that a merger of the big tire companies of the United States is being considered.

According to unofficial reports, Akron's three largest rubber companies, the Goodrich, Goodyear and Firestone, are paying more than \$400,000 to employes weekly. The figures represent an increase of more than 20 per cent. over the same period of one year ago.

An addition to the Falls Rubber Co. will be completed early in September. It will be 80x200 feet, three stories high. This company is making a tire with black tread.

Linemen making an excavation under the Miller Rubber Co.'s warehouse early in the month undermined a brick wall, causing a partial collapse and slight damage.

T. C. Marshall denies reports that the Kelley-Springfield Tire Co. has decided to leave Akron. Although the local plant has had some trouble getting a proper water supply, it is said that no arrangements have been made to move the factory to another city.

The Punctureless Tire Co. is the latest rubber company to be incorporated in Akron.

Rubber companies here are supporting the Akron chamber of commerce in its fight to prevent the sale and abandonment of the Ohio canal for railway purposes. O. C. Barber, Akron's match king, has offered to purchase the canal land to build a railway from Lake Erie to the Ohio river.

More than 300 "jitney buses" are being operated in Akron at present, the largest number operating on Saturday afternoons and Sundays, when many of the employes of the big rubber companies take advantage of the opportunities to earn some extra money. Nearly 200 cars are operated daily. Efforts to regulate the bus business in Akron thus far have failed.

The India Rubber Trade in Great Britain.

By Our Regular Correspondent.

GENERAL REMARKS.

THE rush of government orders having to a large extent been disposed of, it was expected that the rubber trade outside the tire branch would experience a somewhat slack time. This, however, has not been the case, the proofing works, and more especially the mechanical rubber works, where slackness has been noticeable during the winter, now reporting business as being decidedly brisk. The shortage of labor has resulted in the employment of women on work in former times exclusively handled by men.

For the time being, the question of a special tax upon manufacturers largely engaged in government contracts has been abandoned, though the matter was expected to find reference in the budget. Considering the uniform and comparatively low price of rubber, the announcement of a 10 per cent. advance in prices by the Silvertown company has caused some surprise, despite the rise in wages and in the price of certain chemicals. The action of the India Rubber Manufacturers' Association is now being awaited with interest.

OUTPUT OF TIRES.

I have been asked by your Editorial Department if I can give the number of pneumatic tires and also solid tires manufactured in any recent year in England and France. No doubt individual manufacturers know their own outputs, but they keep such knowledge to themselves, in accord with the secrecy which characterizes their general procedure. By way of seeing if any information on the point was obtainable, I put the query to a rubber works manager, asking for a rough estimate, and his reply was 2,000 pneumatic tires and 1,000 solid tires per working day for Great Britain. These seem large figures and no doubt if others care to support or revise them the editor will be pleased to find room for correspondence on the subject.

AMERICAN TIRES.

The B. F. Goodrich Co., Limited, is rapidly adding to its provincial depots in Great Britain, the Glasgow and Manchester establishments being now followed by others at Bristol and Leeds, with more to come, it is understood. A few months ago I referred to the establishment of the Firestone Tire Co., Limited, in London, doubtless in friendly rivalry. The increased use of American pneumatic tires is shown by their common occurrence with Michelins, Dunlops, etc., in reclaimers' yards.

DENTAL RUBBER.

As far as I can gather, the war has not interfered with the supplies of dental rubber, as these come very largely from America, supplemented by the products of one or two home firms. This is one of the few branches in which German competition has been absent, a fact which may have something to do with the high prices charged to British dentists. A prominent practitioner who has some satisfactory investments in rubber plantation companies complains that though the prices were raised by American suppliers of dental rubber to conform to the 12s. 6d. per pound level of raw rubber, they have not yet been reduced and the fact that the American products are still bought speaks for their high quality. Of course ten years ago dentists did not follow the course of the raw rubber market, but things are now different, so many of them having monetary interests therein.

The latest variety of American dental dam or thin pure sheet, which is in great favor in this country, is practically colorless instead of the ordinary brown color of cut or spread

sheet. Obviously, this is made of the colorless rubber produced from plantation latex by the method described at the first London rubber exhibition by Mr. Kelway Bamber. I understand that similar sheet is not as yet obtainable in England, though I know that such rubber was used for certain purposes a few years ago by one of our important rubber works producing surgical goods.

With regard to the manufacture of rubber goods for sports, the summer season bids fair to be as bad as the past winter. County cricket has been abandoned, many of the palatial pavilions being now utilized as Red Cross hospitals, and ordinary club cricket will be much curtailed. There are to be no lawn tennis tournaments, and though the game will be played at clubs and private houses, this will mean a great falling off in the demand for balls, especially as very few of the clubs will play matches. As sporting goods are made by a number of rubber works now fully engaged in other branches, it cannot be said that they will feel the loss of trade to the same extent as the wholesale and retail houses which specialize in such goods.

NEW ISSUES.

New undertakings have been few and far between in the last nine months. On April 12, however, the Searle Rubber Co., Limited, was registered, with a capital of £12,000, including 4,000 5 per cent. cumulative preference shares. An agreement has been adopted with the Searle Unburstable Inner Tube Co., Limited, relating to a license for the manufacture of these tubes. The new company is an offshoot or subsidiary of the older one, which will continue its existence and trade in the tubes as before. The Searle tube is of rubber reinforced with canvas and has been on view for two or three years at motor shows. It has proved its utility in motor tires in withstanding rupture from shock and it is immune from many of the attacks which mean disaster to the ordinary inner tube, though of course it can be cut by anything sufficiently sharp which it may encounter on the road.

An important step has been taken towards the fulfilment of the project to lay sections of rubber street paving in London and elsewhere. Under the auspices of the Rubber Growers' Association a company has been registered with a capital of £90,000 to acquire certain patents and to apply them to road paving. The system in question consists of rubber capped hardwood blocks, so made as to key into each other. A small section has been under trial in London for more than a year, and has received the highest commendations of the local surveyor. Primarily, the object of the sponsors of the undertaking is to further the consumption of plantation rubber, although the scheme obviously has great commercial possibilities. The company will presumably carry on its operations with subsidies of rubber from the plantation companies, each concern guaranteeing to contribute a certain annual per centage of its crop at what is approximately the prime cost. Such cash as may be required will be provided by the issue of preference shares amounting to £20,000. The company could hardly make a better start with its paving scheme than to re-lay the section of roadway which Londoners conceive to be the very center and hub of the universe, namely, the road in front of the Bank of England, Royal Exchange and Mansion House, where eight thoroughfares converge as spokes into the hub of a wheel.

The Government-backed British Dyes, Limited, has gone to allotment and manufacture is now in the initial stages. This big project will alter the tar distilling industry of Great Britain to some extent, and it may be that the days of cheap

solvent naphtha are numbered. As regards the importation of coal tar dyes from Germany, America is of course in the same state as ourselves, and it will be of interest to see if she follows the British lead on the smaller scale necessitated by lack of sufficient raw material. Only quite small quantities of aniline or other coal tar colors are used in our rubber industry, the coloring of toy balloons being the principal application.

THE MARKET FOR CHEMICALS.

According to the price list given in the April issue of THE INDIA RUBBER WORLD the most interesting feature in America is the scarcity of all coal tar products. This is by no means the case here, because our production of these chemicals from gas tar and also coke oven tar has been much more completely developed. Our superiority over all other countries lies in our far greater output of gas tar, which contains a larger amount of benzol and toluol than does the German tar, which is mainly derived from coke ovens, though both countries, as also America, extract considerable quantities of benzol containing some toluol from coke oven gases. Benzol of 90 per cent. is now readily obtainable at the price of 10 d. per gallon, and solvent naphtha is at about ordinary figures.

With regard to accelerators, the list is being rapidly added to by rubber chemists, the latest additions to the patented list including benzylidene-aniline, hydrobenzamide and naphthylenediamine. The only chemical which is really worrying the trade on this side is oxide of zinc, and the American product has the chance of its life time to effect an entrance through doors hitherto closed to it. Caustic soda, an article nowadays of more interest to the reclaimer than to the manufacturer, has had a considerable advance in England, though not so in America. The price on this side is regulated by a convention, and many large users buy soda ash and causticise it themselves, a method in which so far the reclaimers have not followed suit.

A number of the leading British solid tire manufacturers have decided to guarantee their tires in future only for a service of 10,000 miles, within a period of 12 months.

The Dunlop Rubber Co., Limited, of Birmingham, paid on May 1 an interim dividend on its ordinary shares at the rate of 10 per cent. per annum. This company has recently completed additions and improvements by which its capacity has been greatly increased.

Lieutenant Gabriel Ravel, commercial manager of the Michelin Tire Co., of France, has been made Chevalier of the Legion of Honor in recognition of his gallant conduct in battle, where he was seriously though not dangerously wounded.

IMPERIAL INSTITUTE REPORT ON BRITISH GUIANA RUBBER.

The report of the Imperial Institute, of London, on two samples of *Hevea* rubber from British Guiana, shown at the London rubber exhibition and later forwarded to that institute for examination, states that the samples were quite satisfactory as regards preparation, composition and physical properties and that consignments of similar character would always be readily salable at prices closely approximating those of fine plantation Para from the East. These samples, which were from the government stations at Issororo and Onderneeming, were valued commercially at about 2s. 3d. and 2s. 2d., respectively, per pound, as compared with first quality biscuits at 2s. 4d. to 2s. 4½d. per pound.

Exports of balata from British Guiana from January 1 to April 22 of the present year show an increase over those of the same period of 1914 from 273,051 pounds to 451,100 pounds—369,460 pounds of this quantity being shipped to the United Kingdom and 81,640 pounds to the United States. Exports of rubber for the same period of 1915 amounted to 825 pounds.

WORKING FOR THE WAR SUFFERERS.

A. Staines Manders and Miss D. Fulton are continuing their activities in the way of securing subscriptions for war sufferers. Incidentally, no expenses are charged against the amount subscribed, which means, of course, that their work is not only voluntary but absolutely without remuneration. They are now assisting in the organization of a benefit for the work of the Red Cross of the allied armies. To raise money for this a fête is to be given at Calais, where thousands of poor people are being fed, clothed and sheltered. Miss Fulton and Mr. Manders, at the request of the Mayor of Calais, are securing subscriptions for this excellent work. This request, by the way, came through Capitaine-Commandant Leon Osterrieth, of Belgium, whom visitors to the last rubber exhibition will remember. The necessity for help in Calais, and immediate help, is apparent, and Mr. Manders urges all who are interested to send subscriptions, no matter how small.

SOLID RUBBER TIRES IN THE WAR.

The important role motor transport and solid rubber tires are playing in the present war is no secret, but it is perhaps not generally known that the conditions under which these tires are giving service in the European war zone are quite new and such as no tire was built to encounter. The famous "pavés" or granite block highways of Northern France, were always a terror to automobilists, but under war conditions these miles of bumping causeways have been made even more impossible. Solid tires are torn and shattered at their bases and wrenched from their rims long before the tread is worn, and 4,000 miles appears to be about the limit of their service capacity. Over cobblestone pavements, followed for hundreds of miles, day in and day out, tires of considerable resiliency are required, attached to rims by a very wide base. In most solid tires there is not sufficient graduation between the resilient part of the tire and the hard vulcanite base which adheres to the steel band on which the tire is built. The transition is too abrupt, and the consequence is that on roads naturally very rough and further torn to pieces by shell fire and excessive traffic, these tires are torn from their steel bands in a comparatively short time. The ideal tire for service, under such conditions as now exist in the war zone in Northern France, should be wide at its base, and the resilient tread should harden gradually as it approaches the hard ring where the tire is vulcanized to its steel retainer. No doubt the constant hammering to which solid tires are subjected on the "pavés" causes the rubber to crystallize and become brittle at the point where it is made hardest in the course of manufacture.

BRITISH RUBBER MANUFACTURERS ADVANCE PRICES.

Three of the large British rubber manufacturing companies—the North British Rubber Co., Limited, of Castle Mills, Edinburgh; the Dunlop Rubber Co., Limited, of Birmingham, and the Waverly Rubber Co., Limited, of Edinburgh—have announced an advance of 10 per cent. in prices, due to increase in working expenses and in the cost of materials entering into the composition of their product. In the case of the first-named company the advance applies to belting, hose, sheet rubber, packing and mechanical rubber goods. The Dunlop advance applies to rubber tires and their accessories, and the Waverly advance to boots, shoes and waterproof clothing, etc.

Of the imports of crude rubber and gutta percha into Russia in 1913—which amounted to \$20,680,487—\$3,066,035 of this total was received from the United States. Exports of manufactured rubber goods from Russia to the United States for the year ending June 30, 1913, amounted to \$35,270, and similar exports of rubber scrap for the same period were valued at \$641,002.

Conditions In the German Rubber Industry.

IN Germany the fiscal year comes to an end March 31, and this date is always preceded and followed by a slack period in business activities. Accounts are closed and inventories taken, not only by municipal and state administrations but also by many manufacturing concerns. This year, on account of the war, the dull inventory period was more marked than usual, even in the lines that have been kept active by war demands. The army reduced its orders for immediate deliveries to absolute necessities so as to extend payments, with the result that March was an unusually quiet month. But immediately after Easter the situation changed for the better.

The fine weather of the first days of April caused renewal of activity at the front and resulted in a demand for immediate delivery of all orders. Then the labor shortage was seriously felt. The army authorities had granted leave of absence to all the skilled labor that could be spared without weakening the lines at the front. This relieved the labor shortage in rubber factories working on army contracts, but did not help factories working for private trade. However, it is said that those who have taken the place of the skilled labor called to the colors have adapted themselves to new occupations remarkably well.

According to the "Gummi-Zeitung," the war has caused many branches of the rubber trade to flourish as they never did in times of peace, and furthermore, the great struggle has brought about an unprecedented condition of co-operation and organization among rubber manufacturers. Price-cutting has disappeared and many manufacturers express the hope that the *esprit de corps* of the German rubber industry may last after the war and its good effects continue in times of peace.

Further evidence of the shortage of crude rubber in Germany is shown in an order of the mayor of Breslau, in which he thanks his fellow citizens for their zeal in collecting metals for war purposes and asks that they similarly collect bicycle casings and tubes, old rubber shoes and all household rubber articles that can be spared. This old rubber is to be regenerated and re-manufactured. Similar notices have been issued by the municipalities of Kiel, Cassel and other German cities.

Certain German merchants have been sending to neutral countries, as samples of no value, quite a number of articles placed on the export prohibition list by the German Government. The Berlin chamber of commerce has issued a warning to these merchants, telling them that the sale abroad of even a single prohibited article exposes them to the most severe punishments.

Commenting upon the much discussed discovery by W. F. Rittman of a new process making it possible to extract 200 per cent. more gasoline from petroleum than was possible with former processes the "Gummi-Zeitung," printed in Germany, says: "We wish to call attention to the fact that the Rittman process is based upon the experiments of Messrs. Krey and Kraemer who also used distillation under pressure. The methods of these two noted investigators were too costly to ever receive commercial application and this fact alone must cause the Rittman discovery to be greeted with less enthusiasm. Furthermore, residues of crude oil are highly valuable for manufacturing lubricants. In fact they are much more valuable in the shape of lubricating oils than when converted into gasoline. It will always be more desirable for America to extract benzol from coal gas residues than to extract this cheap hydrocarburet from valuable mineral oil."

RECENT REPORTS OF GERMAN RUBBER COMPANIES.

From the annual reports published recently by the most important German manufacturers of rubber goods, it would appear that many of them had a premonition of the imminence of war, as almost uniformly they had provided themselves with unusual stocks of crude rubber and other raw materials essential to their

industry. The salient facts of the most important of these reports is given below:

CONTINENTAL-CAOUTCHOUC-UND GUTTA-PERCHA CO., HANOVER.

Business was good during the first seven months of 1914 but came to a sharp standstill with the beginning of war. Owing to large supplies of raw materials no difficulty was experienced from this source and the company was able to continue shipments to neutral countries until the government placed an embargo on all exports of rubber goods. Practically all work now being done is for the army and navy. Net profits for 1914 amounted to 5,722,102 marks [\$1,361,860].

HANNOVERSCHE GUMMIWERKE "EXCELSIOR" A.-G., HANOVER-LINDEN.

The first seven months of 1914 were prosperous, especially because of the low prices at which raw materials were obtainable. When the war broke out nearly all the employees were called to the colors and business came to a stop and remained inactive until arrangements were made to meet the new conditions and the railroads were opened to commercial traffic. Then, thanks to the ample supplies of crude rubber and other raw materials in stock, the company was able to do a very satisfactory business. The losses in foreign countries involved in the war are considerable, but cannot be determined definitely for the present. The net earnings for 1914 amounted to 1,055,578.85 marks [\$251,228].

MANNHEIMER GUMMI-, GUTTAPERCHA- & ASBEST-FABRIK A.-G., MANNHEIM.

Until the war broke out business in 1914 was quite normal, except in the asbestos department, which was somewhat behind on account of unfavorable prices in this line. Towards the end of the year business, which had been stopped by the outbreak of war, returned to something near the usual level. December 7 marked the fiftieth anniversary of the founding of the company, but, owing to conditions, this date was not the occasion of any notable festivities. The net profits for the year amounted to 294,089.75 marks [\$69,993].

FRANKFURTER ASBESTWERKE A.-G., FRANKFURT, A/M.

The beginning of 1914 was not altogether favorable to the asbestos industry and the first seven months showed a decrease of about 10 per cent. as compared with the previous year. The war deranged all industries, but, owing to the company's foresight, it had a very large supply of raw material and this saved it from great losses, and made it possible to show at the end of the year net profits amounting to 126,920.42 marks [\$30,207].

KOLNISCHE GUMMIFADEN-FABRIK, COLOGNE-DEUTZ.

Active business was experienced during the first seven months of 1914, but it stopped abruptly with August. The company was not fortunate enough to have a large stock of raw material on hand and much of the crude rubber it had purchased abroad, as well as rubber consigned to it but still in transit, was never delivered. The net earnings for the year amounted to 112,236.85 marks [\$26,712].

VEREINIGTEN BERLIN-FRANKFURTER GUMMIWAREN-FABRIKEN, BERLIN-LICHTERFELD.

The brisk business of the first half of 1914 was terminated by the sudden outbreak of war, but luckily the company had ample supplies of raw material and the good fortune to receive very large government orders. The net profits for the year amounted to 405,566.55 marks [\$96,525].

HANNOVERSCHE ACTIEN GUMMIWAAREN-FABRIK, HANOVER-LINDEN.

The twenty-eighth annual report of this company states that the first half of 1914 showed normal business, with a tendency to increase, when the war stopped all work, and matters did not return to anything near the normal until October. The net profits for 1914 amounted to 212,287.95 marks [\$50,525].

VEREINIGTEN HANFSCHLAUCH-U GUMMIWAAREN-FABRIKEN ZU GOTH A.-G., GOTH.

The first seven months of 1914 showed marked progress in the company's business, but war put a stop to everything. Army and navy orders, however, kept the factory in operation. Very high prices were paid for raw materials, especially crude rubber, practically the whole stock of which was taken over in November by the government. The net profits for the year amounted to 194,898.62 marks [\$46,386].

ASBEST-Ü. GUMMIWERKE A.-G., ALFRED CALMON, HAMBURG.

The favorable conditions present at the beginning of 1914 lasted until war broke out and stopped all business activity. Scores of the company's men were called to the army, shipments by sea were totally shut off, land traffic was closed to commerce and payments postponed. Work was, however, later reorganized and the company has been attending to private business as much as extensive government orders would permit. Funds were used to help war sufferers among the company's employees and workmen. After the war was declared the company decided to use its crude rubber supplies strictly for military orders. The net profits for the year amounted to 506,726.41 marks [\$120,601].

UNGARISCHE GUMMIWAAREN-FABRIKS A.-G., BUDAPEST.

For the first six months of last year the business of this company was very good, but naturally both export and domestic trade came to a standstill with the beginning of hostilities, though by reason of important war orders and arrangements made with the government the factories were kept busy. The company had installed new machinery in 1913 for tire manufacture, and was therefore well prepared to handle the Government's orders. The supply of rubber was sufficient until the latter part of December; since which time the company has been greatly hampered because of the difficulty of obtaining crude rubber. The net earnings for 1914 amounted to 1,538,456.72 crowns [\$312,307].

WAR CONTRIBUTIONS BY THE GERMAN RUBBER INDUSTRY.

German manufacturers in general have made great sacrifices in helping their employees and persons dependent upon them through the distress occasioned by the war, and in this line the German rubber industry has not been backward. Some figures from the annual report of the Continental Caoutchouc & Gutta-Percha Co. are exceedingly interesting. Speaking on this subject the report says: "From the beginning of this war we have considered it our natural and most important duty to help the families of those of our employees who are at the front. We believe that these men are doing their full duty in offering their lives to the Fatherland and that they should not, therefore, have the worry of trying to provide for those they were obliged to leave behind. For this reason we opened a 'war account' which, from August 1 to December 31, runs as follows:

	Marks [a mark = 23.8 cents.]
For supporting the families of our workmen and employees now with the colors	434,142.80
For subscriptions to the Red Cross for the army and navy.....	67,092.10
For payments to troops passing through, for cigars, cigarettes, tobacco, chocolate, mineral water, etc., etc.....	19,970.83
For woolen articles sent to the front.....	93,039.03
For helping German prisoners of war in foreign countries and for various presents sent to troops in the field.....	7,564.59
For the upkeep of hospitals.....	30,377.55
Total	652,186.90

This report was read at the annual meeting of the Continental company shareholders, and at this same meeting half a million

marks (\$119,000) was voted for supporting those left by employees and workmen of the company who had fallen in battle, making a total of war expenditures amounting to \$274,220.

A GERMAN FOUNTAIN SPONGE.

This is a fountain sponge of German origin especially adapted to washing surfaces where sand and grit must be removed. The sponge, which may be either natural or made of rubber, is connected through a nicked tube with a rubber hose leading



to the source of water supply. The nicked tube is attached by a strap to the back of the user's hand, as shown in the illustration. [Julius Pintsch Co., Frankfurt, a. M.]

CONSOLIDATED RUBBER AND BALATA ESTATES, LIMITED.

At the annual meeting of the Consolidated Rubber and Balata Estates, Limited, which was recently held in London, the chairman of that company, whose property is in British Guiana, stated that they had harvested during 1914, 1,076,067 pounds of balata, but that owing to the breaking out of the war they experienced great financial difficulties, which, however, they were able to overcome, thanks to the timely assistance tendered them by the Governor of British Guiana. When the war broke out they had a huge stock of balata on hand and heavy liabilities in the way of bills, loans and overdrafts which amounted in fact to about £60,000. Conditions had improved somewhat, and the company had now £50,000 to work with. The chairman promised that dividends would be paid upon receipt of money as the balata was delivered. Before the war Germany was the company's principal customer.

RUBBER AND BALATA EXPORTS FROM TRINIDAD.

During the year 1914, \$46,382 worth of balata gum was exported from Trinidad to the United States, as compared with similar exports valued at \$17,809 in 1913, showing an increase of \$28,573.

RUBBER MACHINERY IMPORTS INTO PANAMA DUTY FREE.

A new law—No. 39 of 1915—was enacted by the National Assembly of Panama on February 24, to become operative May 25 of the present year, by which the customs tariff of the Republic has been revised. Articles of import are now classified under four divisions. Under class one, which covers "articles free of duty," are placed machinery for the treatment of rubber, also sulphate, bisulphate and bisulphide of carbon.

BRAZIL SUSPENDS DUTY INCREASE ON RUBBER GOODS.

The following is the substance of a cablegram received by the Department of Commerce, at Washington, from the United States Consul General at Rio de Janeiro and published under date of May 24:

Owing to the impracticability of enforcing it, it has been decided to hold in abeyance the provision of the Brazilian budget law for 1915 prescribing increased import duties on rubber goods in the manufacture of which Brazilian fine Para has not been used and authorizing special reductions on articles made of such rubber. It is stated that the matter will be again submitted to the Brazilian Congress, which is now in session, and that pending further action the former rates of duty will be applied in the case of the following articles: Surgical instruments and supplies, insulated wire, floor coverings, and rubber tires. Such concession will only be made upon condition that the importer obligate himself to pay the difference in duties in case the provision is not repealed.

PRESENT AND PROSPECTIVE PLANTATION PRODUCTION.

By Our Regular Correspondent.

THE export of plantation rubber from the Federated Malay States during the month of April, although in advance of the total exported in the corresponding month last year, is substantially below the aggregate for March. The following is a comparative table, showing the export for three years:

	1913.	1914.	1915.
January	2,131	2,542	3,473
February	1,757	2,364	3,411
March	1,737	2,418	3,418
April	1,626	2,151	2,777
Total	7,251	9,475	13,079

April is always a light cropping month in Malaya because it comes within the period when the trees shed their leaves. This year the wintering of the trees is said to be rather later than usual.

As might be expected, in view of the shrinkage in the total exports of plantation rubber from this part of the world, the individual crops of many of the old-established estates show a like falling off. The following table of comparative yields for the month of April illustrates this tendency towards reduced crops from the older estates in the Malay Peninsula:

Company.	Yield for April	
	1914.	1915.
Anglo-Malay	96,800	88,700
Batu Caves	44,700	42,000
Bukit Rajah	44,200	40,500
Damansara	44,900	41,400
Golconda	32,500	27,200
Harpender	33,600	24,200
Highlands	83,100	60,250
Kapar Para	49,000	24,000
Kuala Lumpur	86,000	83,000
Linggi	82,800	81,200
Pataing	46,200	41,000
Selangor	51,800	44,760
Surgei Kapar	51,000	35,600
Sungei Way	34,111	32,800
Tremelbye	45,000	33,500

It must not be inferred from the foregoing that all the plantations are reducing their outturn, for the statement only applies to companies at or near maximum production. Practically all plantations having considerable areas of young trees still show substantial crop increases every month. The older estates are, of course, suffering for past misdeeds. These include unskilled tapping in the early days of the industry; excessive tapping at a subsequent date, and, in all cases, too close planting. It is now the order of the day to thin out existing areas, to moderate tapping so as to give a longer period for bark renewal, and in some instances it has been found necessary to rest the trees entirely. All these factors tend to reduce the output and render some of the estimates made of the total production of rubber this year far too sanguine.

HIGHLANDS AND LOWLANDS.

The reduced output shown by Highlands is no doubt partly due to the damage caused by a cyclone which recently visited the property. In view of the standing which this company enjoys in the rubber market, the following extract from the chairman's speech at its annual meeting, held a week ago, will be of interest: "On the whole, you have no doubt gathered that everything is satisfactory, and the prospects for the current year are decidedly favorable, even though I have to tell you that we have heard by cable of a violent wind storm, which has done serious damage, and the latest information is that we have lost 8,000 trees on Highlands and 25,000 trees at Batu Unjor, in consequence of which the estimated production for the current year, which was placed at 1,240,400 pounds, must be reduced by 122,000 pounds, which will make it 1,118,000 pounds."

THE SYNTHETIC BOGEY.

This is the season of plantation company reports, and in the mass they provide some very instructive reading, not untinged with humor. For example, the chairman of Kuala Selangor, a

plantation company that has paid fine dividends for a number of years, let himself go on synthetic rubber to the following effect: "By the way, there is one little matter that I might refer to, viz., that old bogey, synthetic rubber—that peculiar compound of artichokes and sea sponge which was to oust our plantation product. I think that we may finally dismiss the resilient bogey from our minds. He appears to jump forward at intervals, but his resiliency seems to be the only thing that he has in common with our product."

At the same meeting some interesting facts were given concerning yields and producing costs. The oldest trees on the plantation are 8 years of age, and this section gave 500 pounds of rubber per acre. Eventually it is expected that the estate will give 600 pounds per acre all over, and that the costs of production will not exceed 7d. per pound all told. The costs during the past season were at the rate of a trifle over 9d. per pound, and would have been less but for the war.

OUTLOOK FOR RUBBER.

At another annual meeting Mr. McEwan, the late chairman of the Rubber Growers' Association, dealt with the outlook for rubber. During the first three months of 1915 the quantity imported into the United Kingdom from Malaya and Ceylon showed an increase over the same three months of 1914 of 7,940 tons, while the quantity from Brazil and all other places showed a decrease of 3,718 tons. The net increase was 4,222 tons. There are indications that within this year the aggregate of importations will far exceed any previous total. The United States Rubber Co. has in the island of Sumatra 42,725 acres of planted rubber. Allowing only a yield of 400 pounds per acre, this area can produce 7,600 tons per annum, and when a purchasing power of that volume is removed from the sphere of competition for what we produce, it is bound to have some effect. "There will doubtless one day come a struggle," he concluded, "and it is well that producers should combine to place all their energies on the development of new uses for rubber."

STRAITS SETTLEMENTS RUBBER EXPORTS.

A cablegram received by the Malay States Information Agency from the Colonial Secretary, Singapore, states that the export of plantation rubber during the month of March amounted to 2,477 tons as compared with 2,741 tons in February and 1,285 tons in the corresponding month last year.

The following table gives the comparison month by month for three years:

	1913.	1914.	1915.
January	784	1,181	2,576
February	743	1,703	2,741
March	898	1,285	2,477
Total	2,425	4,169	7,794

These figures include transshipments of rubber from various places in the neighborhood of the Straits Settlements, such as Borneo, Java, Sumatra and the non-Federated Malay States, as well as rubber actually exported from the colony, but do not include rubber exports from the Federated Malay States.

COLD STORAGE FOR RUBBER.

Refrigeration of rubber was strongly recommended at the International Congress held in Vienna in 1910, and it appears that European rubber manufacturers have, to a certain extent followed the recommendations made there. But not so with producers and dealers in crude rubber. The fact that the latter have not taken up refrigeration and cold storage is perhaps due to the uncertain character of the rubber market and the fear of increasing the cost of production. However, it might be interesting to subject crude rubber to refrigeration immediately on being collected and to preserve it by cold until it is delivered to the factory.

RUBBER IN GERMAN EAST AFRICA.

EXPORTS of wild rubber from German East Africa, which in 1910 reached a total of 725,584 pounds, with a value of £145,147, fell off to about half that quantity in the following year, and in 1912 amounted to 379,938 pounds, valued at £59,298. The chief rubber-yielding plants native to German East Africa are the *Landolphia Stolzii* and the *Landolphia doudeensis*—the former a vine occurring commonly in the New Langenburg district, north of Lake Nyasa, and the latter a shrubby plant occurring in the southern parts of the Protectorate. Other wild rubber plants are the *Mascarenhasia elastica*, *Landolphia Kirkii*, *Landolphia lucida*, *Cilandra kilimandjarica* and *Holarrhena microterantha*. The wild rubber exported has been collected chiefly in the forest reserves of Kimboza, Mouha, Uluguru (Morogoro) and Unguru (Bagamoyo). Dar-es-Salaam and Kilwa are both reported as producing good wild rubber in considerable quantities.

The planting industry, on the other hand, has made rapid progress during the last few years, the value of exports of plantation rubber, including gutta percha, rising from £20,798 in 1908, to £362,012 in 1912. The Ceara rubber tree (*Manihot Glaziovii*) has been most extensively planted, although some attention has been devoted to *Funtumia elastica*, *Hevea brasiliensis* and *Ficus elastica*, the area under these three varieties amounting in 1910-11 to 355 acres, in 1911-12 to 698 acres, and in 1912-13 to 1,035 acres. A small *Landolphia* plantation was also established some years ago at Langenburg. During 1910-11, when the area planted in Ceara rubber had reached a total of 63,222 acres, divided between 248 plantations, the high price of rubber led to severe tapping of the trees, which, with wind storms of some violence, resulted in extensive damage; and this induced hasty extension of the plantations with consequent less thorough cultivation and rise of wages through scarcity of labor. The area under Ceara cultivation had risen in 1911-12 to 81,705 acres, and in 1912-13 to 112,258 acres.

The following table shows the quantity and value of the rubber exports for the years 1911 and 1912:

	1911.		1912.	
	Tons.	Value.	Tons.	Value.
Plantation rubber and gutta percha (destination Germany and the United Kingdom)	671	£180,480	998	£362,012*
Wild rubber and gutta percha (destination Germany)	168	58,568	181	59,298

Attempts have been made to improve the economic condition of the industry in this Protectorate, mainly by means of less expensive methods of tapping and by the utilization of catch crops or of secondary cultures, such as beans and maize.

RUBBER ON THE GOLD COAST.

During the past six years 250,000 Pará rubber plants and 1,500,000 seeds have been distributed by the government of the British Gold Coast Colony, and many trees have reached the tapping stage. The government is instructing and encouraging the natives in improved methods of tapping and preparation of latex, through its agricultural stations. Attempts have also been made to cultivate *Funtumia Elastica*, but the plants have suffered greatly from violent winds and tornadoes.

FIRESTONE TIRES IN SOUTH AFRICA.

Walter C. Airey & Co., of Cape Town, South Africa, have contracted for the distribution of Firestone tires in Cape Town.

Should be on every rubber man's desk—Crude Rubber and Compounding Ingredients; Rubber Country of the Amazon; Rubber Trade Directory of the World.

RUBBER IN THE FRENCH COLONIES.

French colonial possessions exported over 400,000 pounds of crude rubber and 363,999 pounds of balata gum during 1914. Of the crude rubber Cochin China exported at least 300,000 pounds, and the French Ivory Coast colony about 93,422 pounds, while the balata gum was all exported by French Guiana. Of the Cochin China rubber, 292,761 pounds went to France, the balance to Singapore; less than 80 pounds of the total was forest rubber, the remainder being all of the plantation type.

HEVEA IN DAHOMEY COLONY.

A French colonial inspector reports that a group of *Hevea Brasiliensis* trees planted in 1898-1899 near Porto Novo, French Dahomey colony, is now producing exceptionally well. Prior to 1914 these trees received no regular attention, but in August last year a real attempt at tapping was made, and the trees yielded from 2 to 4½ pounds of dry rubber each. Those trees that yielded only 2 pounds of dry rubber were plants that had been mistreated in the course of former tapings and had not altogether recovered from the abuse they had suffered. The swampy soil of the Dahomey colony appears to be especially well suited to *Hevea Brasiliensis*.

"GOHINE" RUBBER.

The French Colonial Department has recently made experiments with samples of rubber prepared from the latex of a vine known as the "Gohine" (*Landolphia Heudelotii*), obtained from the Upper Senegal and Niger districts of French West Africa. Part of this latex came from Konakry, where it was coagulated with lemon juice, part from Koury, where it was produced by spontaneous coagulation. Vulcanized fine Para hard cure was used as a standard in comparing the vulcanized products of these different samples of "Gohine" latex, and the experiments showed that the difference in the manner of coagulation had but very little effect on the vulcanized product. Samples of "Gohine" latex obtained from Portuguese colonies, where it was coagulated with such vegetable acids as lemon juice, Guiana sorrel juice, "manina" and the like, show, when vulcanized, but slight technical differences. "Gohine" rubber can be classed among good vine rubbers, suitable for industrial purposes.

RUBBER IN INDIA.

The latest number of the Bulletin issued by the Imperial Institute, London, contains a report on two samples of *Castilloa* rubber from India, received for examination in July last. The plants were grown experimentally at the Bassein Botanical Gardens, Bombay, from seeds planted in 1907 and transplanted in June, 1908, the trees being watered at long intervals up to 1913. Sample No. 1, the physical properties of which are reported as fairly good, was from male trees. Rubber of the quality represented by this sample would probably be worth about 1s. 6d. [36.49 cents] per pound in London with fine hard Pará at 2s. 6d. [60.81 cents] per pound, and fine plantation Pará at 2s. 4d. [56.76 cents] per pound. Sample No. 2, from female trees, was similar in appearance to No. 1, but softer and weaker, being worth about 3d. [6.08 cents] per pound less. Analysis of the samples showed the following results:

	No. 1.	No. 2.
Loss on washing (moisture and impurities).....per cent.	7.5	5.3
Caoutchouc	81.6	60.9
Resin	12.4	34.3
Proteins	4.7	3.7
Ash	1.3	1.1

Both samples were in the form of small, irregular balls of dark colored scrap rubber containing some vegetable impurities. The report states that if the rubber could be prepared in the form of sheet it would be more valuable than balls of scrappy rubber. The possibility of making sheet rubber depends upon a sufficient flow of latex to allow of its collection in bulk for subsequent coagulation. In the case of these samples it was stated that the latex was thick, coagulating quickly on the tree and being ready for collection the day after tapping.

THE COLOR OF RUBBER.

While for most purposes the color of crude rubber is of no moment, lighter colored rubber is in general more appreciated by consumers and commands a somewhat higher price than if dark colored. This partially arises from the purity and other qualities of the rubber being judged from its color. In any case, it is of interest to consider the factors upon which the color of rubber depends.

In this connection it should be noted that in most cases freshly coagulated rubber, still saturated with water, has a pure white color, which it keeps as long as it retains the moisture. Thus balls of rubber kept under water to which formaline has been added, in order to prevent decomposition, after some months retain a white color. The same may be said of large balls, which only dry gradually from the outside and retain for a long time their internal moisture and whiteness.

As Professor Zimmermann remarks, in his work upon *Manihot*, "it is not infrequently found that the somewhat yellowish tinged latex of the *Manihot Glaziovii* produces a yellowish tinged rubber, while the latex of *Manihot Piauhyensis* has at all times an intense yellow tinge and produces rubber of a golden or brownish yellow color."

It may, however, be observed that even when the latex is pure white it becomes several shades darker in drying, ranging between light yellow, brownish yellow, dark brown, almost dark.

In general the darkening of the rubber is caused by substances already present in the latex, which become dark through oxidation. This may be regarded as a natural darkening. On the other hand, substances added during or after coagulation may influence the color of the rubber. Specks of different colors may also be produced in drying, by bacteria and other causes.

EFFECTS OF COAGULATION ON QUALITY OF RUBBER.

It has been remarked that the question of the effects of coagulation on the quality of rubber has not been fully treated in technical literature. That such has been the case is attributed to the lack of methods for expressing in figures the technical value of crude rubber. The theory has been generally accepted that the best method of coagulation is that which produces an article with a minimum percentage of substances other than rubber, the process being one in which strongly acting chemicals and high temperatures, likely to injure the crude product, will be avoided.

Tests by Schidrowitz and Kaye of *Kickxia elastica* showed that the percentage of resin in dry rubber varied between 5.30 and 7.82 per cent., while pressing in conjunction with a solvent reduced the proportion to 1.74 per cent. A high percentage of resin (8.76 per cent.) was found to exist with formaldehyde. Other tests by the same experts showed that different methods of coagulation exercised an influence upon the mechanical properties of the rubber.

In a series of tests Beadle and Stevens determined comparative percentage of acids in Brazilian and plantation rubber, with the following results:

	Acid.
Wild Pará rubber.....per cent.	0.120—0.168
Plantation sheets	0.150—0.292
Plantation crepe	0.017—0.120

Schidrowitz attaches importance to the proportion of acid during coagulation, as with a low acid percentage only agglutination ensues, while too much acid, by destroying the network of its texture, would make the rubber hard and brittle.

MOTOR TRUCKS IN CEYLON

There are now 100 commercial motor vehicles in use in Ceylon, and it is expected that within five years the 6,000 bullock carts still in service will be replaced by rubber-tired motor trucks.

PLANTATION PROSPECTS FOR YOUNG MEN.

A daily published in the Far East warns the young men of England and other countries against viewing the possibilities for lucrative employment on eastern plantations with too much optimism unless they are specially qualified for plantation service. It seems that a good many young men have left England for Malaya expecting to drop into pleasant managerial positions with salaries of \$5,000 a year, and more or less luxurious quarters.

When the plantation rubber boom was on there was such a demand for plantation managers and assistants that a great number of young men who went to the Far East without any special qualifications obtained fine positions. But plantation conditions have changed, salaries have been reduced and genuine qualifications are now expected. Assistants are generally employed in supervising laborers, and consequently they are expected to know at least one of the several languages in use among the coolies. They are expected to study economical working and apply it, and they must know how to handle men. The cost of living has become very high in Malaya, and salaries at the start are small, new men being looked upon as learners. Generally speaking, the present is not a good time to obtain appointments on Eastern plantations.

THE TACKINESS OF RUBBER.

Sometimes, in course of transportation or in storage, crude rubber becomes "tacky," thus losing its elasticity and nerve. This phenomenon has often been attributed to the action of microbes, but a French scientist—M. Bertrand—attributes this alteration or decomposition of crude rubber to the action of physico-chemical agents. He states that when rubber becomes "tacky" it is due to a molecular transformation. Exhaustive experiments made by F. Heim and R. Marquis confirm Bertrand's views, for they state, in giving an account of their experiments, first, that the turning of crude rubber into a pitchy, tacky mass is due to the absorption by the rubber of the oxygen of the air, this absorption being favored by a rise in temperature; secondly, that a small quantity of oxygen is sufficient to decompose a large quantity of rubber, and thirdly, that smoking after coagulation preserves rubber from becoming tacky, at least under the conditions present during their experiments. Air is therefore the enemy of crude rubber, which, in order to keep, must be preserved from it. The action of smoke is to cover the crude rubber with a coating that preserves it from air and therefore formaldehyde and creosote are not really the preserving factors of the smoking treatment of rubber.

A NEW RUBBER-SMOKING INVENTION.

A substance has been invented in Ceylon for the production of a smoke for the curing of rubber, the inventor of which describes it as follows:

"This invention is a composition consisting of the pith and short fibres of the coconut husk ground to a coarse powder. To this is added crude petroleum. The whole is then thoroughly mixed and subjected to a pressure of from 20 to 80 tons. For lightly smoking the rubber, the crude petroleum may be left out of the mixture, but to obtain a very good result the mixture should preferably be in the following proportions:—Ground coconut fibre and pith 100 parts. Crude petroleum from 2 to 7 parts according to shade of rubber required. When the composition is ready for use, it can be burnt in any ordinary fire place either in one compressed block or by being broken into little pieces, without in any way reducing the quantity of smoke produced. The advantages of this invention are that it will burn without any trouble and will produce a large quantity of smoke without flame at a very small cost."

The duty on exports from Mexico of the guayule plant, either in the natural state or ground, as fixed on October 19, 1914, by General Carranza, in his character as provisional President de facto, is \$15 per 1,000 kilos (1 ton) gross.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED APRIL 20, 1915.

- N**O. 1,136,009. Cushion tire. H. N. Heilman, St. Louis, Mo.
 1,136,109. Syringe. A. C. Dayton, Northfield, Minn.
 1,136,285. Vehicle tire. J. M. Smith, Malvern, Ark.
 1,136,291. Machine for constructing a laminated cohesive interwound tubular fabric. L. A. Subers, Cleveland, Ohio.
 1,136,292. Reinforced laminated cohesive interwound fabric band. L. A. Subers, Cleveland, Ohio.
 1,136,326. Resilient deformable tire. E. Favary, Boston, Mass.
 1,136,443. Instep arch support. W. M. Scholl, Chicago, Ill.
 1,136,456. Shoe filler. F. E. Woodward, Lachine, Que., Canada.
 1,136,457. Shoe filler. F. E. Woodward, Lachine, Que., Canada.
 1,136,458. Shoe filler. F. E. Woodward, Lachine, Que., Canada.
 1,136,459. Shoe filler. F. E. Woodward, Lachine, Que., Canada.
 1,136,462. Purification of natural and regenerated caoutchoucs and other colloidal matters. C. P. Bary, assignor to H. Debaughe—both of Paris, France.
 1,136,613. Composition for chewing gum. M. M. Raub, Brooklyn, N. Y.
 1,136,662. Vehicle tire comprising an annular air chamber. E. Favary, Boston, Mass.
 1,136,664. Tooth formed with a buccal cusp and a "rubber line shoulder." G. E. Fritz, Peoria, Ill.
 1,136,672. Puncture proof tire. R. B. Hayter, assignor of one-half to C. O. Foster—both of Lawrence, Kan.
 1,136,727. Waterproof shoe. S. J. Harris, Randolph, assignor of one-half to C. Le Roy Seaver, Jr., Stoughton—both in Massachusetts.
 1,136,799. Collapsible core. G. E. Horton and C. S. Wagner—both of Akron, Ohio.
 1,136,819. Waterproof shoe. C. M. Lenker, Shamokin, Pa.
 1,136,892. Automobile tire. W. E. Copthorn, Natick, Mass.
 1,136,900. Method and means for repairing pneumatic tires. L. G. Hardenbrook, Lynden, assignor of one-third to W. R. St. John, Alger—both in Washington.

- Trade Marks.

- 72,773. Charles W. Strehbeck, New York, N. Y. The word *Sof-Tread*. For cushion heels.
 75,785. The De Vilbiss Manufacturing Co., Toledo, Ohio. The word *Atlas*. For compressed bulbs.
 77,606. Bowers Rubber Works, San Francisco, Cal. Illustration of the setting sun, with the word *Sunset*. For rubber hose, belting and packing.
 77,607. Bowers Rubber Works, San Francisco, Cal. The words *Bay City*. For rubber hose, belting and packing.
 77,608. Bowers Rubber Works, San Francisco, Cal. The words *Live Oak*. For rubber hose, belting and packing.
 77,609. Bowers Rubber Works, San Francisco, Cal. The words *Golden-Gate*. For rubber hose, belting and packing.
 77,610. Bowers Rubber Works, San Francisco, Cal. The word *Sunproof*. For rubber hose, belting and packing.
 77,611. Bowers Rubber Works, San Francisco, Cal. The words *Seal Rock*. For rubber hose, belting and packing.
 83,399. Continental Rubber Works, Erie, Pa. The word *U'italic*. For rubber tire stock and rubber sponges.
 83,404. Continental Rubber Works, Erie, Pa. The word *U'italic*. For rubber mallets, typewriter platens and paper machine rolls.
 84,350. The Worthington Ball Co., Elyria, Ohio. The word *Dence*. For golf balls.
 84,798. Wm. Wrigley, Jr., Co., Chicago, Ill. The words *Juicy Fruit*. For chewing gum.
 84,828. Texas Gum Co., Inc., Temple, Tex. The word *Chicamah*. For chewing gum.
 85,160. Atlantic Manufacturing Co., Wilmington, Del. The words *Pep-Step*. For rubber heels.
 85,174. Avon Seale Co., Avon and Brockton, Mass. The word *Resistoe*. For composition soles and heels for shoes.

ISSUED APRIL 27, 1915.

- 1,136,932. Toy balloon. F. F. Brucker, assignor to Miller Rubber Co.—both of Akron, Ohio.
 1,136,981. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y.; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.
 1,136,982. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y.; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.
 1,136,983. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y.; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.
 1,136,984. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y.; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.

- 1,136,985. Vehicle wheel rim. J. H. Wagenhorst, Akron, Ohio, assignor of two-fifths to The B. F. Goodrich Co., New York, N. Y.; one-fifth to the Goodyear Tire & Rubber Co., Akron, Ohio, and one-fifth to the United States Tire Co., New York, N. Y.
 1,137,056. Combined life preserver and body protector. E. H. Gagnon, Billings, Mont.
 1,137,064. Inner tire. G. V. Krichbaum, Ashland, Ohio.
 1,137,097. Tire vulcanizing apparatus. J. D. Tew, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
 1,137,124. Tire. W. Drabold and A. P. Mott—both of Detroit, Mich.
 1,137,127. Rubber head forming and covering apparatus. J. R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.
 1,137,159. Sole for shoes. L. E. Meyer, Akron, Ohio.
 1,137,239. Combined electric and pneumatic horn, comprising a rubber bulb. W. Sparks, assignor to The Sparks-Withington Co.—both of Jackson, Mich.
 1,137,242. Syringe. W. D. Stratton, Grand Rapids, Mich.
 1,137,350. Holding device for vehicle tires. F. F. Phillips, Flushing, N. Y., assignor to The Hartford Rubber Works Co., Hartford, Conn.
 1,137,365. Machine for making or building up pneumatic tires. J. E. Thropp and P. D. Thropp—both of Trenton—and A. DeLaski, Weehawken, assignors to The De Laski and Thropp Circular Woven Tire Co., Trenton—all in New Jersey.
 1,137,385. Toy balloon. F. J. Creque, Cuyahoga Falls, Ohio.
 1,137,387. Arch for shoes. W. Dunbar, Greensburg, Pa.
 1,137,397. Life preserver. P. Gepak, assignor of one-eighth to J. Romarczk, one-fourth to J. Wienicki, and one-eighth to J. Modranski—all of McKees Rocks, Pa.
 1,137,461. Healing composition for the inner tubes of tires, comprising a mixture of reclaimed rubber, etc. J. P. Clare, Stratham, N. H.
 1,137,498. Vehicle tire. R. H. Leach, Honolulu, H. T.
 1,137,511. Machine for treating adhesive coated fabric. J. Meade, assignor to Plymouth Rubber Co.—both of Stoughton, Mass.
 1,137,697. Combination of tire and means for indicating the extent of its use. F. B. Carlisle, Malden, Mass., assignor to Revere Rubber Co., Providence, R. I.
 1,137,724. Vulcanized rubber sole. F. Boyle, assignor to the United States Rubber Co.—both of New York, N. Y.

Design.

- 47,265. Tire casing. E. A. Miller, assignor to East Palestine Rubber Co.—both of East Palestine, Ohio.

Trade Marks.

- 84,812. E. A. Guinzburg, New York, N. Y. An illustration of a water lily with the words *Water Lily*. For bathing caps, etc.
 84,819. Sears, Roebuck & Co., Chicago, Ill. The word *Danube*. For rubber garden hose.
 84,821. Sears, Roebuck & Co., Chicago, Ill. The word *Yukon*. For rubber garden hose.
 84,822. Sears, Roebuck & Co., Chicago, Ill. The word *Orinoco*. For rubber garden hose.
 84,823. Sears, Roebuck & Co., Chicago, Ill. The word *Nile*. For rubber garden hose.
 84,852. The M & M Co., Cleveland, Ohio. The word *Champion*. For tire casings and inner tubes.

ISSUED MAY 4, 1915.

- 1,137,792. Hair drying device, comprising a rubber bulb. G. L. Scheel, Chicago, Ill.
 1,137,855. Cushion tread horseshoe. R. E. Fruin and T. Tobin—both of Chicago, Ill.
 1,137,876. Pneumatic tire gaiter. J. T. McGuire, Newcastle-upon-Tyne, England.
 1,137,888. Tire filler. W. N. Ourslee, Odeholt, Iowa.
 1,137,930. Pneumatic tire. P. V. Traver, Far Rockaway, N. Y., assignor to Traver Puncture Proof Tire Co., Inc.—a corporation of New York.
 1,137,971. Life preserver. S. J. Hines, Plaquemine, La.
 1,138,027. Pneumatic tire. C. Varnell, Houston, Tex.
 1,138,092. Tire shoe and method of constructing same. C. T. Dickey, Elizabeth, assignor to Voorhees Rubber Manufacturing Co., Jersey City—both in New Jersey.
 1,138,129. Automobile tire and rim. J. S. Lyons, assignor of one-half to G. T. Brown—both of Wilkesbarre, Pa.
 1,138,164. Low cut shoe comprising a resilient retainer. C. L. Whitcomb, assignor of one-third to F. E. Whitcomb and one-third to J. A. Holland—all of Brockton, Mass.
 1,138,229. Poncho. C. E. Knoblauch, New York, N. Y.
 1,138,246. Pneumatic tire. J. A. Rabbit, Yokohama, Japan.
 1,138,250. Process of making inner tubes for vehicle tires and the like. A. W. Savage, San Diego, Cal.
 1,138,315. Tire. J. N. Ratterree, Little Rock, Ark.
 1,138,410. Machine for preparing rubber. J. E. Pointon, Peterborough, England.
 1,138,473. Shoe-holding device comprising a length of rubber tubing. W. C. H. P. Hedgecock and F. A. Hedgecock—both of Brighton—assignors to Phillips' Patent, Ltd., London—all in England.

- 1,138,495. Life preserver. J. Macaulay, Lynn, Mass.
 1,138,544. Inner tube for pneumatic tires. C. L. Dawson, Los Angeles, Cal.
 1,138,574. Garter. G. B. Glidden, Dighton, assignor to George Frost Co., Boston—both in Massachusetts.
Trade Marks.
 69,026. Detroit Insulated Wire Co., Detroit, Mich. A single uncolored cotton thread which extends parallel to the wire and is located between the rubber insulation of the wire and the surrounding braid. For insulated electric wires.
 69,027. Detroit Insulated Wire Co., Detroit, Mich. Three parallel uncolored cotton threads which extend parallel to the wire and are located between the rubber insulation of the wire and the surrounding braid. For insulated electric wires.
 69,401. Wrigley's, Ltd., London, England. A gem with the word *Jewel*. For chewing gum.
 75,953. Tyer Rubber Co., Andover, Mass. An illustration of a circle made of rope with *T R Co.* and *Tyrion*. For druggists' sundries.
 78,039. Texas Gum Co., Temple, Tex. An illustration of two sprigs of mint leaves with the words *Mello-Mint*. For chewing gum.
 84,192. The B. F. Goodrich Co., New York, N. Y. The word *Goodrich*. For solid or cushion rubber tires for vehicles.
 84,526. J. De Beer, Johnstown, N. Y. The word *Starter*. For baseballs, etc.
 84,542. Wm. Wrigley, Jr., Co., Chicago, Ill. The words *Twin Mint*. For chewing gum.
 84,665. F. T. Murray, Chicago, Ill., assignor to Qualitire Rubber Co., a corporation of Maine. The word *Qualitire*. For rubber tires.
 84,678. J. Ball, Detroit, Mich. Representation of a hand pump with the word *Stoppaleck*. For dry powdered material adapted for use, after being mixed with liquid, in repairing leaks, punctures, etc., in pneumatic tires.
 84,911. W. G. Richards, Cambridge, Mass. Illustration of an ark, with the words *The Ark*. For life preservers.
 ISSUED MAY 11, 1915.
 1,138,725. Repair heel for rubber footwear. J. Capdevila, New York, N. Y.
 1,138,749. Ball inflator and sealer. A. A. Green, assignor of one-half to H. M. Holland—both of Galesburg, Ill.
 1,138,764. Hermetically sealed bottle, comprising a rubber cork. C. M. Kline, assignor to Smith, Kline & French Co.—both of Philadelphia, Pa.
 1,138,791. Vulcanizing apparatus. T. H. Rieder, Berlin, assignor to Canadian Consolidated Rubber Co., Ltd., Montreal—both in Canada.
 1,138,911. Tire protector. O. M. Thomas, Oakland, Cal.
 1,138,933. Billiard cushion. H. Z. Cobb, Winchester, Mass., assignor to Revere Rubber Co., Chelsea, Mass., and Providence, R. I.
 1,139,065. Resilient wheel. R. T. Park, South Melbourne, Victoria, assignor to R. T. P. Patent Wheels Proprietary, Ltd., Melbourne—both in Australia.
 1,139,234. Vulcanizer. D. R. Searles, Tiffin, Ohio.
 1,139,260. Resilient tire. C. De Lukacevics, West Nutley, assignor to W. H. Dane, East Orange—both in New Jersey.
 1,139,276. Mold for tire fillers. H. J. Hardie, Winnipeg, Manitoba, Canada.
 1,139,312. Bathing cap. H. P. Rindskopf, New York, N. Y.
 1,139,325. Method of making collapsible cores. P. Bacher, Canton, Ohio.
 1,139,338. Tire. F. S. Bryant, Reading, Mass.
 1,139,341. Method of forming hollow articles of rubber. F. A. Cigol, Paterson, N. J.
 1,139,403. Welt strip comprising a body of rubber. O. C. Davis, assignor of one-half to G. E. Keith—both of Brockton, Mass.
 1,139,409. Safety appliance for submarine vessels, comprising a collapsible inflatable bag. J. S. Fraser, assignor of one-half to I. C. Moulton—both of Boston, Mass.
 1,139,418. Bathing cap. E. Hiller, New York, N. Y.
 1,139,467. Hose fabric. W. T. Cole, Newtown, Conn., assignor to Fabric Fire Hose Co., New York, N. Y.
Designs.
 47,347. Tire. D. Spence, Norwalk, Conn.
 47,351. Vehicle tire. E. J. Willis, New York, N. Y.
Trade Marks.
 84,084. Hood Rubber Co., Watertown, Mass. The word *Barnshu*. For rubber boots and shoes, overshoes, and canvas boots and shoes having rubber soles vulcanized thereto.
 85,274. Hood Rubber Co., Watertown, Mass. Representation of a hat with the word *Puritan*. For pneumatic tires and tubes and cushion tires.
 85,616. Frank T. Murray, Chicago, Ill., assignor to Qualitire Rubber Co., a corporation of Maine. The word *Qualitire*. For rubber inner tubes.
 85,620. G. L. Snow, Boston, Mass. The word *Elite*. For rubber boots and shoes.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

UNITED KINGDOM.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below were in 1913 and 1914.

*Denotes Patents for American Inventions.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 14, 1915.]

- 28,805 (1913). Automatic releasing apparatus for hydraulic vulcanizing press. A. Olier & Cie, Usines St. Rémy, Clermont Ferrand, Puy-de-Dôme, France.
 28,830 (1913). Pneumatic sock comprising a top layer of woven material impregnated with rubber. A. J. Marley, 37 Hugon Road, Fulham, London.

- 28,872 (1913). Wheel tire. G. C. Waterfield, Rio Grande, Hainault avenue, Westcliff-on-Sea, Essex.
 28,938 (1913). Machine for washing and masticating scrap rubber. J. A. Roberts, Thames House, Queen Street Place, London.
 *28,978 (1913). Medical syringes. J. L. Owens, 1135 Rialto Building, Kansas City, Mo., U. S. A.
 29,021 (1913). Rubber union reliever. H. J. Pond, 21 Castle Meadows, Norwich.
 *29,062 (1913). Rubber tipped metal studs for pneumatic tires. W. H. Harrison, 415 Chestnut street, Philadelphia, Pa., U. S. A.
 29,123 (1913). Anaesthetic apparatus. L. B. Hall, 16 Meadowcroft Road, Palmer's Green, London.
 *29,201 (1913). Surgical truss having pads with rubber shanks. C. Cluthe, 404 Ridgewood avenue, Glen Ridge, N. J., U. S. A.
 29,215 (1913). Tread bands of rubbered fabric. P. J. Villers, Solre-le-Château, Nord, France.
 *29,268 (1913). Wheel tire. R. M. P. Thorp, 70 Columbia street, Cambridge, Mass., U. S. A.
 29,285 (1913). Surgical truss with pneumatic pads. R. J. Anthony, 279 Price street, Birkenhead.
 [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 21, 1915.]
 29,483 (1913). Heel pad. T. H. Slack, Stafford House, London Road, Alderley Edge, Cheshire.
 29,533 (1913). Dress shields. J. Tucker, 5 Hanover Square, London.
 *29,639 (1913). Tire cover which may be fitted with an air tube or resilient packing. G. F. Fisher, Plainfield, N. J., U. S. A.
 29,750 (1913). Abdominal support and hose supporter. J. H. B. Dawson, Parkeston, Essex.
 29,794 (1913). Golf teeing appliance for home practice. E. Stott, 2 Newall Mount, Otley, Yorkshire.
 29,801 (1913). Wheel tires. W. S. Clayburn, Grange Road, Darlington, and O. Farkasch, 145 Pilgrim street, Newcastle-on-Tyne.
 29,870 (1913). Tube built up of layers of vulcanizable rubber, layers of semi-vulcanizable rubber and layers of raw rubber. J. A. Burgess, 1396 King street, West, Toronto, Ont., Canada.
 *29,983 (1913). Machine for coating and calendaring tire fabrics. H. J. Doughty, Edgewood, R. I., U. S. A.
 30,035 (1913). Composition for application to surfaces subjected to friction, such as boot soles and heels, consisting of about 20 per cent. gutta percha and 5 per cent. of rubber. J. S. Elder, 23 Radnor street, Glasgow.
 30,058 (1913). Wheels with pneumatic and solid tires side by side. F. W. Chedzoy, 19 Alfoxton avenue, Green Lanes, London.
 30,070 (1913). Vulcanite pencil holder. C. Bristow, 20 St. German's Road, Forest Hill, London.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, APRIL 28, 1915.]

- 18 (1914). Golf ball with core. A. C. B. Bell, 17 Lansdowne Crescent, Edinburgh.
 *63 (1914). Tire fabrics. H. J. Doughty, Edgewood, R. I., U. S. A.
 115 (1914). Mud guards comprising a screen of rubber. E. Brunswick, 44 Rue du Faubourg du Temple, Paris.
 162 (1914). Spring wheel with pneumatic cushion enclosed between side plates and continuous or segmental rubber band. J. Sharples, 88 Park street, Swinton, Lancashire.
 342 (1914). Spring wheel with pneumatic cushion. A. Sang, 7a Princes street, Westminster.
 [ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, MAY 5, 1915.]
 404 (1914). Process for forming tire treads. W. Henry, 40 Aldbert Terrace, Albert Square, Clapham, London.
 477 (1914). Twin tire. J. Weller, Park House, Thames Ditton, Surrey.
 548 (1914). Metallic hose covered by layers of india rubber, rubbered canvas and woven wire. C. Rudolph, 66 Rue du Théâtre, Paris.
 620 (1914). Motorcycle driving belt consisting of a continuous rubber layer, rubber blocks, etc. R. Slack, Market Place, Chapel-en-le-Frith, Derbyshire.
 645 (1914). Golf ball. F. T. Swanborough, Oakwood, and Avon India Rubber Co., Bath Road—both in Melksham, Wilts.
 673 (1914). Ball. Gordon Ges., 29 Scheffelstrasse, Dresden, Germany.
 715 (1914). Roll or cylinder for mixing or working india rubber. Miller & Co., and J. White—both of London Road Foundry, Edinburgh.
 768 (1914). Spring wheel with pneumatic cushion. O. H. Bursell, Umea, Sweden.
 784 (1914). Printing roller with printing apparatus having a yielding backing of sponge rubber. National Advertograph Co., H. A. Rice and C. G. Patterson, 195 Victoria street, Toronto, Ont., Canada.
 904 (1914). Billiard cue with vulcanite cap and rubber tip. L. Pearson, "Thornycroft," Merthyr Tydfil.
 948 (1914). Pen. C. Bristow, 20 St. German's road, Forest Hill, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (WITH DATES OF APPLICATION.)

- 474,624 (December 13, 1913). Automatic pneumatic chamber. Société Française de Caoutchouc, Montsouris.
 474,635 (July 3, 1914). Elastic wheel. F. Le Fer de la Gervinais.
 474,646 (July 4). Improvements in elastic wheels. E. M. Kramer.
 474,695 (July 4). Machine for spreading rubber on both sides of a fabric at the same time. Société A. Olier et Cie.
 474,729 (December 20, 1913). Inner tube for cycle and motorcycle tires. A. Soly.
 474,755 (July 4, 1914). Pneumatic runners for sledges. J. E. Ollivier.
 474,801 (July 7). Solid rubber tire for trucks and automobiles. E. Krect.
 474,900 (July 9). Dress shields. Société Mouilbau, Fayaud, Laurain et Cie.
 474,901 (July 9). New method of manufacturing dress shields. Société Mouilbau, Fayaud, Laurain et Cie.

THE GERMAN EMPIRE.

Patents Issued (With Dates of Validity).

284,214 (February 19, 1914). Device for manufacturing solid plastic masses. (Supplement to Patent No. 274,179.) Karl Hagendorf, Baufelds b. Fredersdorf a. d. Ostbahn, and Dr. Adolph Breslauer, 13 Hecktorstrasse, Berlin-Haensee.

THE MARKET FOR CHEMICALS AND COMPOUNDING INGREDIENTS.

THE market in general for May was firm and prices in many instances advanced during the month. There was little change during the first week. A good demand gave strength to zinc oxide and lithopone, while lead pigments were steady and prices firm in harmony with the zinc materials. There was a fair demand for many colors, and Prussian blue was quoted at advancing prices. There was a good call for whiting, but little variation was noted in prices, as most consumers are covered ahead, and grinders of chalk seem to be well supplied with raw material. The export demand for glycerine caused a sharp advance in price of all grades, and the market is still firm.

By the middle of the month, some of the dry colors, including chrome green and yellow, were moving fairly well at higher prices. Considerable Italian talc came into the market and spirits of turpentine declined in price. The sulphurets of antimony have again been marked up due to the scarcity of this commodity caused by the war. Antimony is not obtainable for the American market as Great Britain uses this mineral in connection with lead in the manufacture of bullets. Carbon tetrachloride is becoming quite scarce and prices have advanced. The situation with regard to aniline oil has not changed for the better and future supplies will depend upon progress made in its domestic production. Toward the end of the month zincs became rather unsettled and prices advanced about 4 cents a pound. Dry colors continued firm and Prussian blue was quoted still higher. The chalk market developed a firmness notwithstanding the arrival of 1,850 tons of chalk from England.

The light oils such as benzol and solvent naphthas, toluene, etc., are largely used by the rubber trade and it is estimated that in 1913 three to five million gallons of light oil were obtained from tar in the United States. Toluol and mixtures containing toluol have been added to the British embargo list.

PRICES OF CHEMICALS AND COMPOUNDING INGREDIENTS.
NEW YORK, MAY 29, 1915.

Acetone (drums)	lb.	\$0.21 @ .23
Acid, acetic, 28 per cent. (bbls.)	lb.	.02 @ .02 1/4
glacial (carboys)	lb.	.07 1/4 @ .08 1/4
Aluminum Flake (carboys)	ton	18.00 @ 20.00
Antimony, crimson, sulphuret of (casks)	lb.	.70 @ .75
golden, sulphuret of (casks)	lb.	.50 @ .55
Arsenic Sulphide	lb.	none
Asbestine	ton	15.00 @
Asbestos	ton	20.00 @ 50.00
Asphaltum "G" Brilliant	ton	40.00 @
Barium Carbonate	lb.	none
Barium Sulphate, precipitated	ton	65.00 @
Barytes, domestic	ton	17.00 @ 18.00
foreign	ton	19.00 @ 23.00
Basoform	ton	70.00 @
Benzol, 90 per cent.	gal.	1.00 @ 1.25
Beta-Naphthol	lb.	2.00 @ 2.50
Black Hypo	lb.	.30 @
Blanc Fixe	lb.	.03 1/4 @ .04
Cadmium, yellow	lb.	none
Carbon Bisulphide (drums)	lb.	.06 1/2 @ .07 1/2
Carbon Tetrachloride (drums)	lb.	.15 @ .18
Caustic Soda (bbls.)	lb.	.03 @
Chalk, light precipitated (casks)	lb.	.04 1/2 @
China Clay, domestic	ton	10.00 @ 12.00
imported	ton	25.00 @ 30.00
Chrome, green	lb.	.06 @ .15
yellow	lb.	.11 @ .13
Dichlorethane	lb.	.12 @ .12 1/2
Emarex	ton	70.00 @
Gas Black	lb.	.04 @ .06
Gilsonite	ton	36.00 @ 37.50
Granat Red	lb.	none
Glycerine, C. P. (drums)	lb.	.21 @
Graphite (bbls.)	lb.	.02 1/4 @
Green Oxide of Chromium (casks)	lb.	.32 @ .35
Iron Oxide, black (casks)	lb.	.05 @ .06
red, reduced grades	lb.	.02 @ .13
red, pure	lb.	.06 1/2 @ .08
Infusorial Earth, powdered	ton	50.00 @
bolted	ton	60.00 @
Ivory, black	lb.	.08 @ .12

Indian Red	lb.	.02 1/2 @ .05 1/4
Japan Red	lb.	none
Lampblack	lb.	.03 @ .07
Lead, red oxide of	lb.	.05 1/4 @
sublimed blue	lb.	.05 @
white, basic carbonate	lb.	.05 1/4 @ .05 3/4
white, basic sulphate	lb.	.04 1/4 @ .05
Lime, flour	lb.	.01 @ .02
hydrated	lb.	.01 @ .02
Litharge	lb.	.05 1/4 @
English	lb.	none
Lithopone, American	lb.	.04 1/4 @ .04 3/4
imported	lb.	none
Magnesia, carbonate	lb.	.04 1/4 @ .05 1/4
calcined, heavy	lb.	.06 1/4 @ .09 1/4
light	lb.	.20 @ .25
Magnesite, calcined, powdered	ton	30.00 @ 35.00
Mica	lb.	.02 @ .05
Mineral Rubber	lb.	.02 @ .04 1/2
Naphtha, stove gasoline (steel bbls.)	gal.	.12 @
66 @ 68 degrees	gal.	.18 @
68 @ 70 degrees	gal.	.19 @
Oil, aniline	lb.	.90 @ 1.00
corn, crude	lb.	.06 1/2 @ .06 3/4
linseed (bbl.)	gal.	.66 @
rosin	gal.	.25 @ .55
rape seed, blown	gal.	.87 @ .88
Orange Mineral, domestic	lb.	.07 1/2 @ .08 1/4
Paragol	lb.	.06 1/2 @
Petrolatum No. 5 (wood bbls.)	lb.	.02 1/2 @
Pine Tar, retort	lb.	5.25 @ 5.50
Prussian Blue	lb.	.70 @ .75
Pumice Stone, powdered (bbls.)	lb.	.02 @
Rosin (280 pound bbls.)	lb.	3.40 @ 6.00
Rubber Black	lb.	.02 1/2 @ .03
Rubber Flux	lb.	.05 1/4 @
Rubber Substitute, black	lb.	.08 1/2 @ .09
white	lb.	.08 1/2 @ .15
Shellac, fine orange	lb.	.20 @ .25
Soapstone, powdered	ton	5.50 @ 15.00
Sulphur Chloride (drums)	lb.	.07 1/2 @ .08
Sulphur, flowers	cat.	2.20 @ 2.60
Talc, American	ton	9.00 @ 15.00
French	ton	15.00 @ 25.00
Toluol, pure	gal.	4.00 @ 5.00
Tripolite Earth, powdered	ton	50.00 @
bolted	ton	60.00 @
Turpentine, spirits	gal.	.42 @
Ultramarine Blue	lb.	.08 @ .20
Vermilion, Chinese	lb.	1.25 @ 2.00
English	lb.	1.25 @ 1.40
Wax, Bayberry	lb.	.20 @ .22
Beeswax, white	lb.	.35 @ .50
Ceresin, white	lb.	.09 1/4 @ .16
Carnauba	lb.	.26 @ .45
Ozokerite, refined white	lb.	.70 @ .75
Montan	lb.	.20 @ .22
Paraffine, refined,	lb.	.03 1/4 @
118/120 m. p. (cases)	lb.	.04 @
123/125 m. p. (cases)	lb.	.04 1/4 @
128/130 m. p. (cases)	lb.	.06 @
133/136 m. p. (cases)	lb.	.06 1/2 @
crude, white, 117/119 m. p. (bbls.)	lb.	.03 1/2 @
yellow, 124/126 m. p. (bbls.)	lb.	.03 1/2 @
Whiting, Alba, factory	ton	6.50 @ 7.50
commercial	cat.	.45 @ .50
Paris white, American	cat.	.70 @ .75
English cliffstone	cat.	.75 @ 1.10
Zinc oxide, American process (factory)	lb.	.03 1/2 @ .06
French process, green seal	lb.	.14 1/4 @
red seal	lb.	.14 1/4 @
white seal	lb.	.15 1/4 @
Zinc sulphide	lb.	none

Statement of the ownership, management, etc., of THE INDIA RUBBER WORLD, published monthly at New York, N. Y., for April 1, 1915, required by the Act of August 24, 1912.

Editor, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Managing editor, John P. Lyons, 201 West 105th street, New York.

Business manager, Henry C. Pearson, Tompkins Corners, Putnam Co., New York.

Publishers, The India Rubber Publishing Co., 25 West Forty-fifth street, New York.

Owner, Henry C. Pearson, Putnam Co., Tompkins Corners, New York.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of total amount of bonds, mortgages, or other securities: None.

(Signed) JOHN P. LYONS, Managing Editor.

Sworn to and subscribed before me this twenty-third day of March, 1915.

(Signed) FREDK. SPRINGER,

[SEAL.] Notary Public, Westchester County.

Certificate filed in New York County, New York County Clerk's No. 204. Register's No. 6370.

(My commission expires March 30, 1916).

Review of the Crude Rubber Market.

NEW YORK.

May 29, 1915.

THE receipts of crude rubber during the first week of May were heavy and in some cases prices were cut in order to secure the necessary release. The large buyers, however, failed to enter the market, and by the end of the week prices had fallen off due to the pressure to sell. On May 10 First latex crepe, spot, was 58 cents; Smoked sheets ribbed, spot, 59 cents; Up-river, fine, 59 cents. During the second week a lively interest in the market developed and considerable business was the result, prices advancing strongly. First latex crepe sold at 62 cents, Smoked sheet, ribbed, at 62½ to 63 cents, while Up-river fine was firm at 61 cents. This movement was no doubt due to the manufacturers' desire to stock up in anticipation of any political disturbances that might result in cutting off the supply of rubber.

During the third week, and in fact until the close of the month, trading was very quiet and spot prices irregular. First latex crepe declined to 60½ cents, Smoked sheet, ribbed, to 60 cents, while Up-river fine remained at 61 cents. The closing prices for the month were as follows: Up-river fine, spot, 60 cents; First latex crepe, spot, 60¾ cents; July-September, 58 cents. Smoked sheet ribbed, spot, 61 cents; July-September, 58½ cents. The New York receipts of plantation rubber from Liverpool and London were about 5,250 tons in April against 5,115 tons in March and 4,300 tons in February.

While it is not expected that very much rubber will arrive in New York unsold, provision has been made whereby the unsold rubber may be warehoused. The Rubber Club of America has agreed to handle and release such shipments on the signing of the usual guarantees. A minimum charge of 25 cents per case will be made for this service. The owner of the rubber, however, must pay the customary warehouse, cartage, insurance and other charges.

Arrangements have been made for releasing plantation rubber imports received at San Francisco. The same form of guarantee is demanded from both the importer and manufacturer, and all shipments must be cleared through the British consul. The following rubber manufacturers are bonded in London and consequently do not file guarantees with the Rubber Club of America, Inc.:—General Rubber Co., The B. F. Goodrich Co., Goodyear Tire & Rubber Co., Hood Rubber Co. and Michelin Tire Co.

RUBBER AFLOAT.

Rubber cargoes afloat from London to New York will arrive on the steamships "Largo Law" and "Monadanock." The Booth line steamship "Stephen" from Para and Manaos was due in New York, May 28, with 520 tons. Shipments direct from the Far East are continuing in number. There are now en route from Colombo to New York six steamships that are carrying rubber. From Singapore there are four steamships, and from Batavia there are two, all of which are due to arrive in New York some time during this month.

THE LONDON MARKET.

During the early part of May, while there was considerable activity in futures, there were comparatively few large buying orders for immediate delivery. The market grew firmer, however, toward the end of the first week, Standard crepe selling at 2s. 3d., Smoked sheet at 2s. 3¼d., and Hard Para at 2s. 6d. Unusually large consignments arrived at this port, including 1,500 tons on the steamship "Lycaon," but re-shipments were somewhat slow because of continued delay in securing permits.

Prices hardened a little towards the middle of the month, advancing 1¼d. for Standard crepe and 1¼d. for Smoked sheet, while Hard Para rose ½d. The reason for the advance was

the larger orders from America together with the resumption of shipments to Russia, via Archangel. Stocks at London increased a little during the month of April. At the end of March they stood at 6,874 tons. The receipts for the month were 6,016 tons, the deliveries 5,705 tons, leaving stocks at the end of April amounting to 7,185 tons. Some of the rubber that has been going to America would under normal conditions have been shipped to Germany and Austria-Hungary; these two countries having imported 6,000 tons during the first three months of 1914. Brazilian sorts have ruled firmer during the month owing to the comparatively small receipts at Para and Manaos.

During the last week of the month there was some further hardening of prices in this market, Standard crepe selling at 2s. 5d., Smoked sheet at 2s. 5¼d., while Hard Fine Para still remained at 2s. 6½d.

SINGAPORE AND COLOMBO.

At the weekly auction held at Colombo, April 10, there was a good demand for all grades. About 170 tons were offered. At the earlier auctions held March 15 and 16, 175 tons were offered.

The weekly auction held at Singapore, March 16, resulted in the sale of 150 tons out of an offering of 210 tons, Standard crepe bringing 2s. 4½d. to 2s. 5¼d. At the auction of March 30, 105 tons changed hands.

BATAVIA, JAVA.

The first rubber auction was held March 26, and there were 40 tons of rubber sold. Fair prices were realized, and hereafter weekly auctions will be held. There was received in New York direct from Batavia in March 338 tons of rubber, and in April 392 tons, while shipments are continuing to arrive.

NEW YORK QUOTATIONS.

Following are the quotations at New York one year ago, one month ago, and May 29, the current date:

PARA.	June 1, '14.	May 1, '14.	May 29, '15.
Upriver, fine, new.....	\$0.70@71	\$0.60 @	\$0.61 @
Islands, fine, new.....	61@63	53 @	52 @
Islands, fine, old.....	63@64	.....	.....
Upriver, coarse, new.....	42@43	46 @	46 @
Islands, coarse, new.....	29@30	30 @	28½@
Cameta	32@33	34 @	32 @
Cauchó, upper	42@43	48 @	47½@
Cauchó, lower .....	.....	45 @	44½@

PLANTATION HEVEA.

Smoke sheet ribbed.....	57@59	{ Spot 59 @	61 @
		{ Afloat 58 @	61 @
First latex crepe.....	57@59	{ Spot 58½@	60½@
		{ Afloat 57 @	60½@
Fine sheets and biscuits un-smoked	55@57	.....	.....

CENTRALS.

Corinto .....	.....	46 @	46 @
Esmeralda, sausage	43@44	45 @	45 @
Guayaquil, strip .....	.....	.....	.....
Nicaragua, scrap	42@43	44 @	.....
Panama .....	.....	.....	.....
Mexican plantation, sheet....	43@46	.....	.....
Mexican, scrap	40@42	46 @	.....
Manicoba, scrap .....	.....	37½@	37 @
Mangabeira, sheet	40@42	37½@	38 @
Guayule .....	.....	28 @29	29 @
Balata, sheet	64@65	55 @	55 @
Balata, block	46@49	48 @	45 @

AFRICAN.

Lopori, ball, prime.....	49@53	.....	53 @55
Aruwimi.....	35@47	.....	.....
Upper Congo, ball red.....	40@	.....	.....
Ikelemba.....	35@45	.....	.....
Sierra Leone, first quality....	37@40	.....	.....
Massai, red.....	48@50	54 @	54 @
Soudan Niggers.....	40@42	.....	.....
Cameroon, ball.....	25@33	.....	.....
Benguela.....	31@32	30 @	30 @
Accra, flake.....	22@23	23 @	23 @
Rio Nunez Niggers.....	.....	.....	54 @
Konakry Niggers.....	.....	.....	55 @
Lagos, lump.....	.....	.....	28 @29
Gold Coast, lump.....	.....	.....	27 @28
Ivory Coast, lump.....	.....	.....	27 @28

EAST INDIAN.

Assam.....	50 @	.....
Pontianak.....	7¼@	7½@7¼

United Kingdom

IMPORTS OF RUBBER.

From—	Month ending April 30.			Four months ending April 30.		
	1913.	1914.	1915.	1913.	1914.	1915.
Dutch East Indies.....tons	...	...	40	...	...	726
French West Africa.....	105	39	64	64	163	171
Gold Coast.....	120	53	14	404	153	56
Other Countries in Africa.....	...	...	307	...	...	941
Peru.....	134	20	85	487	296	356
Brazil.....	2,126	1,568	1,561	7,929	6,455	4,836
British India.....	...	...	176	...	...	705
Straits Settlements and Depend- encies, including Labuan.....	1,457	1,691	3,435	4,944	6,749	13,018
Federated Malay States.....	935	999	1,305	3,268	3,995	4,453
Ceylon and Dependencies.....	497	529	1,154	2,121	2,704	6,736
Other Countries.....	1,841	1,396	135	6,355	5,856	652
Total.....	7,217	6,295	8,276	26,072	26,371	32,650
*Waste and Reclaimed.....	...	...	141	...	...	389
Total.....	...	...	8,417	...	...	33,039

EXPORTS OF RUBBER.

To—	Month ending April 30.			Four months ending April 30.		
	1913.	1914.	1915.	1913.	1914.	1915.
Russia.....tons	639	703	798	2,431	2,616	2,240
Germany.....	741	939	...	3,672	3,406	...
Belgium.....	212	132	...	681	853	...
France.....	472	460	782	1,578	2,247	2,116
United States.....	1,457	2,360	6,184	5,283	8,534	14,955
Other Countries.....	308	331	632	1,200	1,454	2,914
Total.....	3,829	4,925	8,396	14,845	19,110	22,225
*Waste and Reclaimed.....	...	...	29	...	...	72
Total.....	...	...	8,425	...	...	22,297

*Included in "Rubber" prior to 1915.

RUBBER STATISTICS FOR LONDON AND LIVERPOOL, APRIL, 1915.

London—	Imports.	Deliv- eries.	Stocks.		
			1913.	1914.	1915.
Plantation.....tons	5,826	5,709	3,192	3,580	6,994
Other kinds.....	58	63	979	644	585
Total.....	5,884	5,772	4,171	4,224	7,579
Liverpool—					
Para.....	762	836	1,213	962	1,104
Other kinds.....	430	410	1,309	1,136	355
Total.....	1,192	1,246	2,522	2,098	1,459
Total London and Liverpool...	7,076	7,018	6,693	6,322	9,038

CENTRALS.

[*This sign, in connection with imports of Cen-
trals, denotes Guayule rubber.]APRIL 26.—By the *Monterey*=Mexico:

Graham, Hinkley & Co.....	3,000
H. Marquardt & Co.....	400
Murphy & Fultz.....	1,500
Various.....	700
Total.....	5,600

APRIL 27.—By the *Calamare*=Port Limon:

Isaac Brandon & Bros.....	500
A. A. Linde & Co.....	700
Total.....	1,200

APRIL 30.—By the *Colon*=Colon:

G. Amsinck & Co.....	21,600
Piza, Nephews & Co.....	5,500
Total.....	27,100

Andean Trading Co.....	4,100
W. R. Grace & Co.....	1,400
Goutard & Co.....	1,300
Harburger & Stack.....	300
Commercial Bank of Spanish America.....	300
Total.....	34,500
MAY 1.—By the <i>Monmus</i> =New Orleans:	
E. Steiger & Co.....	3,000
MAY 1.—By the <i>Carrillo</i> =Colombia:	
A. Held.....	2,000
Winter Son & Co.....	2,000
International Banking Corp.....	9,000
Muller, Schall & Co.....	1,500
Total.....	14,500
MAY 3.—By the <i>Creole</i> =New Orleans:	
E. Steiger & Co.....	6,000

MAY 3.—By the <i>Siroala</i> =Puerto Cortez:	
G. Amsinck & Co.....	2,500
M. C. Keith.....	2,000
A. Rosenthal & Sons.....	1,200
Eggers & Heinlein.....	300
Total.....	6,000

MAY 5.—By the *Cristobal*=Colon:

G. Amsinck & Co.....	44,500
W. R. Grace & Co.....	16,000
Laidlaw & Co.....	2,000
Total.....	62,500

MAY 5.—By the *El Mando*=Galveston:

G. Amsinck & Co.....	*33,000
Various.....	*45,000
Total.....	78,000

MAY 5.—By the *Tenadores*=Port Limon:

Isaac Brandon & Bros.....	3,000
G. Amsinck & Co.....	800
Suzarte & Whitney.....	700
Total.....	4,500

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commercial paper, No. 68 William street, New York), advises as follows:

"The report for May can practically be repeated the same as for April, namely, that the demand for paper still continues good, the best rubber names being taken at 4¼ per cent., and those not so well known at 5½ per cent."

PRICES FOR APRIL (New Rubber).

	1915.	1914.	1913.
Upriver, fine.....	\$0.57 @ 0.60	\$0.74 @ 0.76	\$0.78 @ 0.89
Upriver, coarse.....	0.46 @ 0.48	0.44 @ 0.47	0.54 @ 0.66
Islands, fine.....	0.52 @ 0.55	0.69 @ 0.73	0.76 @ 0.85
Islands, coarse.....	0.30 @ 0.33	0.31 @ 0.34	0.37 @ 0.41
Cameta.....	0.33 @ 0.37	0.35 @ 0.37	0.39 @ 0.45

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

APRIL 27.—By the steamer *Denis*, from Para and Manaos:

	Fine.	Medium.	Coarse.	Cancho.	Total.
Meyer & Brown.....	1,300	.....	2,500	700=	4,500
Arnold & Zeiss.....	.....	.....	9,500	.....	9,500
Henderson & Korn.....	.....	.....	.....	5,300=	5,300
H. A. Astlett & Co.....	11,100	7,400	1,200	.....	19,700
Rumsey & Grentert Co.....	1,300	.....	500	.....	1,800
Johnstone, Whitworth & Co.....	.....	22,500	.....	.....	22,500
W. R. Grace & Co.....	3,600	.....	600	9,500=	13,700
G. Amsinck & Co.....	4,400	700	1,800	2,000=	8,900
Total.....	21,700	8,100	38,600	17,500=	85,900

APRIL 30.—By the steamer *Purus*, from Para and Manaos:

Meyer & Brown.....	8,800	400	155,200	14,400=	178,800
Henderson & Korn.....	63,500	10,100	68,800	11,000=	153,400
Arnold & Zeiss.....	27,200	400	64,300	42,200=	134,100
G. Amsinck & Co.....	59,800	900	16,500	36,700=	113,900
Robinson & Co.....	63,500	1,800	26,700	11,000=	103,000
H. A. Astlett & Co.....	39,200	2,700	29,200	2,000=	73,100
Hagemeyer & Brunn.....	.....	.....	22,800	.....	22,800
Crossman & Sielcken.....	200	.....	4,100	300=	4,600
General Rubber Co.....	.....	.....	2,400	.....	2,400
Henderson & Korn.....	.....	.....	1,700	.....	1,700
Total.....	262,200	16,300	391,700	117,600=	787,800

MAY 10.—By the steamer *Dunstan*, from Para:

Arnold & Zeiss.....	7,400	2,200	42,000	1,400=	53,000
G. Amsinck & Co.....	11,100	700	21,800	.....	33,600
Total.....	18,500	2,900	63,800	1,400=	86,600

MAY 13.—By the steamer *Rio de Janeiro*, from Para and Manaos:

Meyer & Brown.....	900	.....	102,600	1,400=	104,900
General Rubber Co.....	420,030	.....	31,400	.....	451,400
Henderson & Korn.....	21,000	1,900	80,200	1,500=	104,600
H. A. Astlett & Co.....	18,500	2,100	46,100	3,900=	70,600
Crossman & Sielcken.....	.....	.....	10,600	45,000=	55,600
G. Amsinck & Co.....	25,100	400	15,500	1,300=	42,300
Neuss, Hesselstein & Co.....	20,700	.....	.....	18,200=	38,900
Arnold & Zeiss.....	4,300	.....	26,900	.....	31,200
J. T. Johnstone & Co.....	.....	.....	29,500	.....	29,500
Total.....	510,500	4,400	342,800	71,300=	929,000

MAY 17.—By the steamer *Gregory* from Para and Manaos:

Meyer & Brown.....	14,500	.....	17,600	.....	32,100
H. A. Astlett & Co.....	26,900	12,600	13,200	1,500=	56,200
W. R. Grace & Co.....	.....	.....	34,800	.....	34,800
Henderson & Korn.....	200	.....	11,600	9,400=	21,200
Arnold & Zeiss.....	.....	.....	14,600	.....	14,600
Robinson & Co.....	.....	.....	200	1,100=	1,300
Total.....	27,100	12,600	90,900	29,600=	160,200

QUITOS.

G. Amsinck & Co.....	116,700	400	700	15,200=	133,000
J. T. Johnstone & Co.....	3,400	400	800	58,000=	62,600
H. C. Kupper.....	35,500	.....	3,800	12,400=	51,700
H. A. Astlett & Co.....	21,900	.....	3,300	600=	25,800
W. R. Grace & Co.....	13,200	.....	4,600	4,300=	22,100
Total.....	190,700	800	13,200	90,500=	295,200

MAY 10.—By the <i>Advance</i> —Colon:			MAY 5.—By the <i>Carpathia</i> —Lisbon:			Chas. T. Wilson Co., Inc.....			*60,000		
G. Amsinck & Co.....	12,000		S. R. Sequerra.....	105,000		Hood Rubber Co.....			*17,000		
A. M. Capen's Sons.....	5,000		MAY 12.—By the <i>Saxonia</i> —Liverpool:			Robert Badenhop.....			*33,500		
W. R. Grace & Co.....	1,000		Arnold & Zeiss.....	95,000		Various.....			*16,000 *1,347,000		
Herman Wolf & Co.....	3,000		Rubber Trading Co.....	19,200		MAY 14.—By the <i>Cloughton</i> —London:					
Pablo, Calvet & Co.....	4,000		General Rubber Co.....	6,000	120,200	Meyer & Brown.....			*40,000		
American Trading Co.....	2,000		MAY 13.—By the <i>Colombo</i> —Lisbon:			Arnold & Zeiss.....			*415,000		
Mecke & Co.....	1,000		W. H. Stiles.....	45,000		J. T. Johnstone & Co.....			*336,000		
Camacho, Roldan & Von Sichel..	500	28,500	Robert Badenhop.....	67,000		W. R. Grace & Co.....			*190,000		
MAY 10.—By the <i>Amities</i> —New Orleans:			Edward Maurer Co., Inc.....	22,500	134,500	L. Littlejohn & Co.....			*470,000		
E. Steiger & Co.....	2,500		MAY 24.—By the <i>Adriatic</i> —Liverpool:			Rubber Trading Co.....			*10,000		
MAY 10.—By the <i>Enclid</i> —Bahia:			Edward Maurer Co., Inc.....	11,200		Edward Maurer Co., Inc.....			*30,000		
Adolph Hirsch & Co.....	67,000		EAST INDIAN.			Henderson & Korn.....			*120,000		
J. H. Rosshich & Bros.....	22,500		[*Denotes plantation rubber.]			L. Blitz.....			*11,200 *1,655,700		
Aldens' Successors, Ltd.....	28,000	117,500	Pounds.			MAY 15.—By the <i>Orduna</i> —Liverpool:					
MAY 10.—By the <i>Morro Castle</i> —Mexico:			APRIL 26.—By the <i>Century</i> —Colombo:			The B. F. Goodrich Co.....			*11,200		
Lawrence Johnson & Co.....	13,000		Meyer & Brown.....	*57,000		MAY 17.—By the <i>Glenstrae</i> —London:					
Diehl & Co.....	600		General Rubber Co.....	*27,000		Meyer & Brown.....			*142,000		
H. Marquardt & Co.....	400		L. Littlejohn & Co.....	*110,000	*194,000	Aldens' Successors, Ltd.....			*2,500		
J. A. Medina & Co.....	200	14,200	APRIL 26.—By the <i>Kandahar</i> —Colombo:			L. Blitz.....			*45,000		
MAY 11.—By the <i>Metapan</i> —Port Limon:			Meyer & Brown.....	*55,000		Robinson & Co.....			*50,000		
A. A. Linde & Co.....	600		General Rubber Co.....	*150,000		Edward Maurer Co., Inc.....			*100,000		
Isaac Brandon & Bros.....	600		L. Littlejohn & Co.....	*155,000	*360,000	Henderson & Korn.....			*50,000		
Costa Rica Trading Co.....	500	1,700	APRIL 27.—By the <i>St. Stephen</i> —London:			J. T. Johnstone & Co.....			*100,000		
MAY 13.—By the <i>Protens</i> —New Orleans:			Meyer & Brown.....	*60,000		General Rubber Co.....			*22,500		
E. Steiger & Co.....	23,500		Arnold & Zeiss.....	*300,000		Arnold & Zeiss.....			*125,000		
MAY 13.—By the <i>Rio de Janeiro</i> —Bahia:			General Rubber Co.....	*435,000		Rubber Trading Co.....			*112,000		
J. H. Rosshich Bros & Co.....	5,000		Hood Rubber Co.....	*35,000		Robert Badenhop.....			*60,000		
Various.....	5,000	10,000	Robert Badenhop.....	*13,500		Hood Rubber Co.....			*40,000		
MAY 14.—By the <i>Almirante</i> —Cartagena:			Chas. T. Wilson Co., Inc.....	*195,000		Chas. T. Wilson Co., Inc.....			*35,000		
A. Held.....	5,000		Edward Maurer Co., Inc.....	*160,000		Chas. T. Wilson Co., Inc.....			*112,000		
International Banking Corp.....	1,200		L. Blitz.....	*35,000		L. Littlejohn & Co.....			*170,000		
Pablo, Calvet & Co.....	500	6,700	Rumsey & Greutert Co., Inc.....	*11,200		Various.....			*22,000 *1,188,000		
MAY 14.—By the <i>El Rio</i> —New Orleans:			Rubber Trading Co.....	*33,500		MAY 19.—By the <i>Minnehaha</i> —London:					
Various.....	40,000		L. Littlejohn & Co.....	*420,000		Meyer & Brown.....			*185,000		
MAY 17.—By the <i>Tivier</i> —Puerto Cortez:			Aldens' Successors, Ltd.....	*22,500		Edward Maurer Co., Inc.....			*45,000		
General Export & Commission Co.....	300		Johnstone, Whitworth & Co.....	*270,000		Michelin Tire Co.....			*125,000		
Eggers & Heimlein.....	100		W. R. Grace & Co.....	*2,200		Hood Rubber Co.....			*25,000		
G. Amsinck & Co.....	100	500	Various.....	*175,000	*2,167,900	Chas. T. Wilson Co., Inc.....			*115,000		
MAY 18.—By the <i>Pastores</i> —Cristobal:			APRIL 30.—By the <i>Nevadan</i> —London:			Goodyear Tire & Rubber Co.....			*110,000		
Neuss, Hesslein & Co.....	5,000		Meyer & Brown.....	*107,000		Various.....			*20,000 *625,000		
MAY 20.—By the <i>El Oriente</i> —Galveston:			Arnold & Zeiss.....	*125,000	*232,000	MAY 24.—By the <i>New York</i> —Liverpool:					
Various.....	*60,000		MAY 3.—By the <i>Philadelphia</i> —Liverpool:			Goodyear Tire & Rubber Co.....			12,500		
MAY 22.—By the <i>Alhambra</i> —Colon:			Robert Badenhop.....	11,200		MAY 24.—By the <i>Tokushima Maru</i> —London:					
Pottberg, Eheling & Co.....	1,200		Various.....	4,500	15,700	Goodyear Tire & Rubber Co.....			*40,000		
MAY 24.—By the <i>Zacapa</i> —Cartagena:			MAY 3.—By the <i>Nebraskan</i> —London:			Arnold & Zeiss.....			*35,000		
A. Held.....	8,000		Goodyear Tire & Rubber Co.....	*33,500		J. T. Johnstone & Co.....			*22,500 *97,500		
Isaac Brandon & Bros.....	2,000		Chas. T. Wilson Co., Inc.....	*95,000		MAY 24.—By the <i>Lenox</i> —Singapore:					
Maitland, Coppell & Co.....	1,500		Robert Badenhop.....	*115,000		General Rubber Co.....			*290,000		
G. Amsinck & Co.....	1,000	12,500	Hood Rubber Co.....	*45,000	*288,500	Henderson & Korn.....			*90,000		
MAY 24.—By the <i>Monterey</i> —Mexico:			MAY 7.—By the <i>Indrakula</i> —Singapore:			The B. F. Goodrich Co.....			*60,000		
Diez & Co.....	2,000		Goodyear Tire & Rubber Co.....	*250,000		Chas. T. Wilson Co., Inc.....			*30,000		
I. A. Medina & Co.....	500		The B. F. Goodrich Co.....	*290,000		J. T. Johnstone & Co.....			*30,000		
H. Marquardt & Co.....	200		Chas. T. Wilson Co., Inc.....	*45,000		L. Littlejohn & Co.....			*11,200 *537,200		
Various.....	5,000	7,700	Hood Rubber Co.....	*20,000		CUSTOM HOUSE STATISTICS.					
MAY 25.—By the <i>Calamarez</i> —Limon:			General Rubber Co.....	*225,000		PORT OF BOSTON—APRIL, 1915.					
Isaac Brandon & Bros.....	2,000		I. T. Johnstone & Co.....	*95,000		Imports:					
A. Held.....	2,000		L. Littlejohn & Co.....	*70,000		India rubber.....		Pounds.		Value.	
Fruit Despatch Co.....	800		Edward Maurer Co., Inc.....	*11,200		Gutta percha.....			25,237	\$11,180	
A. A. Linde & Co.....	500		Henderson & Korn.....	*230,000		Gutta jelutong (Pontianak).....			58,050	6,862	
G. Amsinck & Co.....	200	5,500	Aldens' Successors, Ltd.....	*94,000		Rubber scrap.....			909,571	57,138	
MAY 25.—By the <i>Angan</i> —Colon:			Various.....	*6,000 *1,336,200		Exports:			24,414	2,121	
G. Amsinck & Co.....	12,000		MAY 8.—By the <i>Tropea</i> —London:			Rubber scrap.....			18,402	\$2,568	
Otto Gerdau.....	6,500		Meyer & Brown.....	*112,000		PORT OF CLEVELAND—APRIL, 1915.					
Lawrence Johnson & Co.....	1,000	20,500	General Rubber Co.....	*462,000		Imports:					
MAY 25.—By the <i>Angan</i> —Colon:			Arnold & Zeiss.....	*210,000		India rubber.....			104,454	\$59,563	
G. Amsinck & Co.....	7,500		Robinson & Co.....	*105,000		Rubber scrap.....			27,412	2,673	
AFRICANS.			Edward Maurer Co., Inc.....	*185,000		PORT OF DETROIT—APRIL, 1915.					
APRIL 26.—By the <i>New York</i> —Liverpool:			L. Littlejohn & Co.....	*215,000		Imports:					
Chas. T. Wilson Co., Inc.....	12,500		Henderson & Korn.....	*90,000		Rubber scrap.....			9,571	\$672	
APRIL 26.—By the <i>Lord Sefton</i> —Liverpool:			The B. F. Goodrich Co.....	*2,200		Rubber reclaimed.....			47,073	4,632	
Henderson & Korn.....	11,200		W. R. Grace & Co.....	*67,000		PORT OF NEW ORLEANS—APRIL, 1915.					
APRIL 26.—By the <i>Roma</i> —Lisbon:			Aldens' Successors, Ltd.....	*15,000		Imports:					
Robert Badenhop.....	22,500		Rubber Trading Co.....	*30,000		India rubber.....			29,266	\$18,958	
W. H. Stiles.....	22,500	45,000	L. Blitz.....	*70,000 *1,563,200		Exports:			50,235	\$25,674	
MAY 1.—By the <i>Tronto</i> —Liverpool:			MAY 12.—By the <i>Missouri</i> —London:			Guayule.....			2,160	626	
Aldens' Successors, Ltd.....	7,000		Meyer & Brown.....	*67,000		PORT OF PHILADELPHIA—APRIL, 1915.					
J. T. Johnstone & Co.....	3,500		The B. F. Goodrich Co.....	*170,000		Imports:					
Various.....	4,200	14,700	Goodyear Tire & Rubber Co.....	*75,000		Rubber scrap.....			9,046	\$723	
MAY 3.—By the <i>Philadelphia</i> —Liverpool:			Michelin Tire Co.....	*4,000		Exports:			2,305	255	
Edward Maurer Co., Inc.....	11,200		General Rubber Co.....	*900,000		PORT OF SAN FRANCISCO—APRIL, 1915.					
			Edward Maurer Co., Inc.....	*4,500		Imports:					

Plantation Rubber From the Far East.**EXPORTS OF CEYLON GROWN RUBBER.**

(From January 1 to March 22, 1914 and 1915. Compiled by the Ceylon Chamber of Commerce.)

To—	1914.	1915.
Great Britain	4,214,688	7,404,194
United States	1,596,384	1,745,084
Belgium	1,559,032	.....
Germany	427,005	.....
Japan	111,253	119,582
Russia	98,482	137,259
France	60,336	35,840
Straits Settlements	35,815	78,990
Australia	20,160	43,486
India	500	500
Canada and Newfoundland .....	.....	340,140

Total 8,123,655 9,905,075

(Same period 1913, 5,692,636 pounds; same period 1912, 3,109,446.)

The export figures of rubber given in the above table for 1914 include the imports re-exported. [These amount to 928,613 pounds.] To arrive at the total quantity of Ceylon rubber exported for that period deduct these imports from the total exports. The figures for 1915 and 1912 are for Ceylon rubber only.

TOTAL EXPORTS FROM MALAYA.

(From January to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, March 12	Malacca, Feb. 25	Penang, Jan. 31	Port Swettenham, March 25	Total, March 31.
Great Britain..pounds	1,148,251	1,385,559	2,262,933	7,519,083	20,315,826
Continent	682,849	.....	106,266	2,240	791,355
Japan	70,126	.....	.....	70,126	.....
Ceylon	31,925	.....	73,733	388,704	494,362
United States	2,451,141	.....	70,666	2,521,807	.....
Australia	114,680	.....	.....	.....	114,680
Total	12,498,972	1,385,559	2,513,598	7,910,027	24,308,156
Total, 1914	7,145,573	886,290	1,746,266	7,599,973	17,378,102
Total, 1913	4,806,621	.....	1,027,733	7,604,588	13,438,942
Total, 1912	2,161,478	.....	699,106	3,945,893	6,806,477

SINGAPORE.

Guthrie & Co., Ltd., report [March 30, 1915]:

There was a good inquiry for most grades at the auction held today and although last week's price of \$131 per picul for ribbed smoked sheet was not reached the average of values generally showed an improvement. Crepes were in particularly strong demand and all descriptions met with a ready sale at good prices.

Fine ribbed smoked sheet sold up to \$130, a decline of \$1, while good sheet fetched \$125. Unsmoked sheet touched \$118, an advance of \$2 on the week. Fine pale crepe was \$1 higher at \$129, while among the lower grades of crepe some substantial improvements were recorded. Scrap rubbers were very firm.

Of 155 tons offered, 105 tons changed hands, some large lots being very quickly withdrawn from the sale.

The following was the course of values:

	In Singapore, Picul.*	Sterling equivalent per pound in London.	Equivalent per pound in cents.
Sheet, fine smoked.....	\$126@130	2/ 4 3/4 @ 2/ 5 1/2	58.28@59.80
Sheet, fair to good.....	112@125	2/ 1 3/4 @ 2/ 4 1/2	52.20@57.77
Sheet, unsmoked	110@118	2/ 1 1/2 @ 2/ 3	50.93@54.73
Crape, fine pale.....	125@129	2/ 4 1/2 @ 2/ 5 1/2	57.77@59.04
Crape, good pale.....	121@125	2/ 3 3/4 @ 2/ 4 1/2	56.00@57.77
Crape, fine brown.....	115@119	2/ 2 3/4 @ 2/ 3 1/2	53.46@55.24
Crape, good brown	113@118	2/ 2 @ 2/ 3	52.70@54.73
Crape, dark	105@116	2/ 0 1/2 @ 2/ 2 1/2	49.16@53.97
Crape, bark	89@113	1/ 9 @ 2/ 2	42.57@52.70
Scrap, virgin	88@103	1/ 8 1/4 @ 1/ 11 1/4	42.06@48.39
Scrap, loose	79@ 88	1/ 7 1/8 @ 1/ 8 1/4	40.29@42.06

*Picul = 133 1/2 pounds.

Quoted in S. S. dollars = 2/4 [56 cents].

THE RUBBER SCRAP MARKET.

THE New York market showed considerable strength during the first week in May, with auto tires, inner tubes and boots and shoes leading. For standard mixed tires the mills paid 5 to 5 1/2 cents per pound, delivered, while special tires were selling from 6 to 6 1/2 cents f. o. b. Akron. Boots and shoes were quoted close to 7 1/4 cents, delivered. A tendency toward weakness developed by the middle of the month, due to the ample supplies offered to the reclaimers. This has resulted in prices falling off

about 1/8 of a cent, and dealers were willing to make deliveries at the new figures, but few mills cared to take advantage of the price. Mixed tires were very dull, the only interest noticed being in special brands. It is evident that the mills are well stocked, having bought quite heavily for the past three or four weeks. Toward the end of the month mixed tires developed weakness, but special brands were selling as high as 7 cents to the mills. There were rumors of boots and shoes being sold f. o. b. mills, at 7 1/4 to 7 1/2 cents per pound.

CANADIAN MARKET.

Scrap rubber can now be exported from Canada to the United States and shipped direct to the American consumer. Special license, however, must be secured from the Commissioner of Customs at Ottawa, Canada. This should stimulate trade, as no doubt there is considerable stock available for this purpose. Auto tires are moving in large quantities, particularly the special grades, such as Goodyear and Goodrich.

RUBBER SCRAP PRICES PAID BY CONSUMERS FOR CARLOAD LOTS.

New York, May 29, 1915.

	Per Pound.
Boots and shoes	\$0.07 1/2 @ 0.07 3/4
White Goodrich and Goodyear tires.....	.06 1/4 @ .06 1/2
Morgan & Wright and U. S. tires.....	.05 1/4 @ .05 1/2
Trimmed arctic.....	.06 @ .06 1/4
Auto tires, mixed.....	.04 3/4 @ .05
Solid tires .....	.04 1/4 @ .05
No. 1 inner tubes .....	.24 1/2 @ .24 3/4
No. 2 inner tubes .....	.11 1/2 @ .12 1/2
Red tubes .....	.13 @ .13 1/2
Bicycle tires .....	.02 3/4 @ .03
Irony tires .....	.01 1/4 @ .02 1/4
No. 1 auto peelings.....	.08 @ .08 1/2
Mixed auto peelings.....	.06 3/4 @ .07
No. 1 soft white rubber.....	.11 @ .12
White winger rubber.....	.09 @
No. 1 red scrap .....	.10 @
Mixed red scrap .....	.07 1/4 @ .07 1/2
Mixed black scrap .....	.02 1/4 @
Rubber car springs.....	.03 1/4 @
Horse shoe pads .....	.03 @ .03 1/4
Matting and packing .....	.00 1/2 @ .00 3/4
Garden hose .....	.00 3/4 @ .00 3/4
Air brake hose .....	.04 1/4 @ .04 1/2
Cotton fire hose .....	.01 3/4 @ .02

THE MARKET FOR COTTON AND COTTON FABRICS.

THE cotton market was greatly disturbed during the first week of May by reason of various war rumors and in sympathy with the weak Liverpool market. The tendency of prices was downward and the selling pressure continued until it resulted in considerable demoralization. Prices recovered somewhat and conditions appeared more promising, when fresh liquidation based on more war rumors sent prices off again.

During the second and third weeks of the month dullness prevailed, but during the last week buying was renewed and prices again hardened.

The Sea Island market is quiet.

Savannah quotations on Georgias are as follows: Fancy, 25 @ 26 cents; Extra Choice, 25 @ 26 cents; Choice, 24 @ 25 cents.

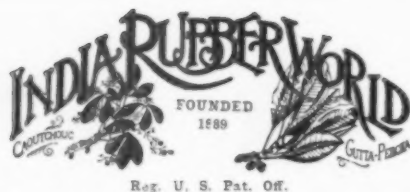
Staple cotton goods and tire fabrics are firm in spite of large buyers staying out of the market in the hope of lower prices later on.

Quotations of May 27 are as follows:

17 1/4-ounce Combed Sea Island.....	square yard	\$0.57
17 1/4-ounce Combed Egyptian.....	.....	.45
17 1/4-ounce Carded Egyptian.....	.....	.42
17 1/4-ounce Carded Peelers.....	.....	.35

The following is the market on May 27 for mechanical ducks, sheetings and Osnaburgs:

Hose and belting duck.....	lb.	\$0.19 1/2
Sheetings and Osnaburgs:		
2.50-ounce 40-inch	square yard	\$0.06 1/4
2.70-ounce 40-inch06 1/8
2.85-ounce 40-inch05 7/8
3.15-ounce 40-inch05 3/4



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The Manhattan Rubber Manufacturing Co., which manufactures mechanical rubber goods, with factories, warehouses and executive offices at Passaic, New Jersey, has moved its New York branch office from 18 Vesey street to the new Equitable building at 120 Broadway.

L. Littlejohn & Co., crude rubber brokers, have moved to better and more commodious quarters. Their address is now 138 Front street, New York City.

The Faultless Rubber Co., of Ashland, Ohio, has added two new buildings to its plant. One of these, 60x200 feet, two stories high, is equipped with 600 lockers, also toilets and shower baths, for the use of employees. The other, 60x60 feet, is to be used as a mill and calender experimental department, with its second story devoted to hand finishing.

BATAVIA RUBBER MARKET.

BEFORE the European war broke out practically all the crude rubber produced in the Dutch East Indies was forwarded to Amsterdam, Holland, to be there sold and re-shipped. But the war placed so many difficulties in the way of shipping that it soon became almost impossible to get the crude rubber to Amsterdam, and the rubber market of that city is now practically closed. To dispose of their product, the rubber producers of the Dutch East Indies formed the Batavia Association for the Rubber Trade, which association, in turn, organized the Batavia Rubber Market, using the Amsterdam market as a model. The Batavia Association for the Rubber Trade is registered in Batavia and is formed for a term of 25 years beginning March 1, 1915, its object being to further and protect the rubber trade. According to the regulations for trading in rubber on the Batavia market, which were framed and recently published by the Batavia Association, rubber is now sold in Batavia by private sale, by public auction and by forward contract. Buyers must be houses established or represented in the Netherlands Indies, or crude rubber brokers connected with the Batavia Association. Prices are computed in Dutch cents and half cents per metric pound or one-half kilogram, and terms are cash, without discount, sellers always having the right to demand payment per scale. Delivery is taken, in private auction, within 14 days at the latest, unless the parties have otherwise agreed, and the goods are stored pending delivery. The same rule applies to public auction sales. In case of forward sale, delivery is taken on first warning of the sellers, under condition that they give opportunity for inspection. In case of parcels damaged by sea, fire or water, delivery is taken as per conditions of sale. When a buyer fails to take delivery at the proper time the seller has the right to weigh the goods, and from that moment they become the property of the purchaser at his account and risk. Rubber is weighed in gross for account of sellers and the tare afterwards deducted. Delivery is made on the scale.

Monthly auctions are held as arranged by the Batavia Association, according to a plan determined on by the Board of this association in conjunction with the brokers, and notice of the auction is given seven days in advance of the date fixed. Tenders are lodged in closed envelopes stating the names of the brokers connected with the association through which the bidder wishes to buy. Prices paid are kept secret until all bids of the date have been dealt with.

Sellers pay a total commission of $\frac{1}{2}$ per cent. to the purchasing broker. The same rules apply both for private and public auctions.

The association stipulates the forms of contract for sale made by forward contract. Other forms of sale are allowed, as long as they do not deviate from the general rules of the Batavia Rubber Market. Sales under the official conditions of other markets are also allowed. The Board of the association decides all cases not provided for in the market regulations.

The Batavia association has also organized a Rubber Arbitration Bureau to decide, at the request of the parties concerned, any disputes which under the law may be settled by arbitration. This bureau is also to decide upon differences in quality, and upon defaults in carrying out contracts for future delivery, and is to fix allowance when necessary.

RUBBER TRADE INQUIRY.

[107.] A reader of THE INDIA RUBBER WORLD requests assistance in locating the American representatives of the firm of Schirm, of Leipzig, Germany, which manufactures a dipping apparatus for use in the production of transparent rubber nipples.

